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In compiling figures for the annual statistics that are published in this issue, a number of thousand of letters and some hundreds of telegrams were sent to railroad officers, and we owe an acknowledgment of thanks to the great majority of officers to whom inquiries were sent. There has been a noticeable change during the past few years in railroad officers' attitudes towards inquiries from the public or the press, and in the replies received by the *Railway Age Gazette* this year the change has been more marked than ever before. The inquiries that were sent out in regard to financial changes this year were sent direct to the presidents of railroad companies with a request that they be referred to the proper officers for an-

swer, and it is a notable fact that in the great majority of cases of railroad companies operating over a thousand miles, the replies showed evidence of the personal interest either of the president himself or of some one in his office who had studied the request for information carefully and had authority to have these inquiries fully answered. As a matter of fact, in a number of cases the presidents of the large systems took the interest to sign these replies personally. Of course, in some cases there were roads, even among the larger companies, which made meaningless replies, or which refused to give the information asked for, but it was a fact that in nearly every case these companies were companies that have a reputation for reticence that is widely known; but these were the exceptions that proved the rule. For instance there was an auditor of one of the largest systems in the West who replied that he could not give the information called for in the letter that had been referred to him by his president for the "calendar year" 1912, because the year had not yet ended. There are a good many things that a railroad officer is called on to do nowadays that are not directly connected with his duties in connection with earning money for his company. The government calls on the railroad company for a great mass of figures; the local daily papers demand the fullest news about railroad accidents, and state authorities add their requests to the others. When, therefore, the very great majority of railroad officers take as much trouble and as much pains, as was shown in replies to the questions sent out by the *Railway Age Gazette*, it is an indication of the general broader view of their responsibilities that railroad men are coming to take that is worth recording.

THE total mileage of railways in the United States worked by automatic block signals, as shown by our annual statement, published in this issue, has increased over the total of one year ago only 10 per cent.; but the progress made is not to be measured by mileage alone. Some of the larger companies have made important improvements in apparatus already in service, spending large sums for the purpose of insuring greater efficiency and to make still safer a system already safe in a high degree. The elaborate and costly additions to the simple automatic system (as formerly known) which have been included in the new work done on the Pennsylvania, and with which our readers are acquainted, are to be found, in a less degree, on a number of other roads. With these improvements go the approach and route locking which are necessary to add the final refinements of safety to interlocking, and which also are finding favor on those roads which feel able to spend the large sums of money necessary to provide such refinements. Taking these into account the signal departments are to be credited with very substantial progress during the past year; and the notes which we print concerning the plans for 1913 show that this progress is to be continued. New signaling is to be installed on a number of large roads which were not ready to give us particulars of their plans. The total length of road block signaled, including manual block signals, which is about 78,000 miles, increases but slowly; but this total is a figure which still has to be taken with some allowance, for the reason that it includes a large mileage of single track where the advantages of the space-interval system are not fully availed of. The most novel element of the progress which has been made in the signaling field during the past year is the increased attention which has been given to means for insuring that trains shall surely be stopped at stop signals—otherwise known as the automatic-stop problem. Our list of experiments in this field, published in the issue of September 20, page 506, was a surprise to many readers by reason of its length. That list showed one notable new experiment, that of the Chicago & Eastern Illinois; and now the Delaware, Lackawanna & Western is to be added to the list. While the question of perfecting the discipline of enginemen is not receiving any less attention than heretofore, and while many of the elements of the auto-

matic-stop problem and of its relation to discipline still remain difficult, it may be said with confidence that our more enterprising railroad managers and engineers are now intelligently striving to provide the most perfect provision against collision that it is possible to devise.

RAILWAY OFFICERS ON THE SITUATION AND THE OUTLOOK.

WE publish elsewhere in this issue a remarkably interesting symposium of the views of leading railway officers on four important subjects. The subjects dealt with are the business outlook for 1913, the proposed establishment of a national commission to regulate wages and conditions of work of employees, the things that are needed to promote safety in transportation, and the adequacy of railway facilities.

The views expressed regarding the business outlook for 1913 are generally quite optimistic. The railway managers who are quoted believe that the impetus given to business by the large crops raised in 1912 will supply the railways with a heavy traffic far into the calendar year 1913. It is a fair inference from what they say that they expect gross earnings to be the largest in the fiscal year ending June 30, 1913, that they ever have been. A good many of them are less optimistic about net earnings. They expect substantial increases in operating expenses to be caused by the necessity of making good a large amount of deferred maintenance, and meeting the requirements of public authorities in regard to service, by increases in the prices of materials and equipment, and perhaps also by the demands of employees for higher wages and easier conditions of work. On the whole, however, they evidently expect that net earnings as well as gross earnings in the fiscal year ending June 30, will be much larger than in recent years. As the present prosperity of the roads is attributed to the good crops of 1912, so the consensus of opinion is that the amount of earnings in the last half of the calendar year 1913 will depend upon the crops of 1913; and apprehensions are expressed that an overdose of politics may cause trouble.

If any one had asked railway managers ten years ago whether they favored public regulation of the wages and conditions of work of railway employees, he doubtless would have received an emphatic, "No," from all along the line. The fact that most of those who discuss this subject now endorse the recommendation for the creation of a wage commission which was made by the board that arbitrated the controversy between the Eastern railways and their enginemen is highly significant. It is usually the weaker party that desires to arbitrate. The position of the railway managers in dealing with organized labor has been weakened in many ways in recent years. They used to feel that they were quite capable of coping with organized labor in case of a strike. If they were beaten they could raise their rates, provided the different competing railways could agree. The public now requires much more from railways than it did then. It would insist more vigorously on the maintenance of continuous operation, and in case of a strike in which they were defeated, the managers might not be able to pass the burden of increased expense along to the public. The labor brotherhoods, on the other hand, are more perfectly organized than they used to be, and the public at present does not hold them to any stricter accountability for what they do than it did before they became thus organized. These things have weakened the railway managers' position and strengthened the labor brotherhoods' position.

The employees used to demand arbitration, assigning as one of the grounds that the public's interests would be jeopardized in case of a strike. The railway managers now favor arbitration, assigning, among others, this same reason. And in each case the contention that the public's interest requires that strikes shall be prevented is right. A good many of the railway officers favor regulation of wages by the same body that regulates rates. There seems to be a great deal of logic in this, although

the arbitration board favored a separate wage commission. The income of the railways is determined by the body that fixes their rates. Their expenditures would be largely determined by the body that fixed the wages they must pay. It is rather hard to see why the body that determines the income might not properly be authorized—if anybody should be—to regulate the largest item of expenditure; for obviously, on what the income is must depend what can be spent.

Perhaps the most interesting discussion in this symposium is that relating to safety. Several of the railway officers mention the great need for the passage and enforcement of legislation that will reduce trespassing and the many fatalities in which it results. Respecting other accidents, the need for better discipline of employees and the improvement of the physical properties is fully recognized. It would seem that the managers might properly put somewhat more stress than they do on the need not only for enforcement of the rules of the railways and of punishment for their violation, but also for incessant instruction and drilling of employees regarding the meaning of the rules and the things that should be done in order to obey them. The need for more care in instructing, examining and drilling employees is fundamental and general. Running a railway is much like commanding an army, and in order to get the best results railway employees should be instructed and drilled as incessantly as soldiers are. There is not enough frank recognition by railway officers of the fact that many accidents are due to honest errors on the part of employees which occur either because they have not been instructed enough in the meaning of the rules, or have not been drilled until it has become second nature for them in emergencies to do the thing that safety demands. Another great and general need is more incessant, rigorous supervision to see that employees not only know the rules, but always obey them. No amount of instruction and drilling will take the place of the supervision that sees and requires that the right thing always is done. There should be not only more supervision of the employees, but also more supervision of the subordinate officers who supervise the employees. It is easy enough after an accident has happened because some employee disobeyed a rule for his immediate superior to say that he should have obeyed it, when it may be that he did not obey it in the particular case because his superior officer had for a long time been winking at chronic disobedience of exactly the same kind.

However, the best instruction, supervision and discipline on a railway whose track and equipment are defective will not prevent accidents due to these physical conditions, nor will the best track and equipment and the best instruction and discipline prevent many accidents which can be prevented only by the installation of devices specifically intended to promote safety, the most important of all being block signals. In view of the notable unanimity with which railway managers advocate block signals, it is rather remarkable how small is the mileage that has thus far been installed. It is often said that the reason why many railways have not installed them is that they are too poor, but the cost of the block system may be quite small if the management is willing to make its blocks long enough. A large number of railways in the United States have installed the block system on practically their entire mileage, including their poorest branches. The following figures show the percentages of the mileages of the railways mentioned that are worked by the block system:

Baltimore & Ohio.....	100	Michigan Central.....	100
Bessemer & Lake Erie.....	97	New York Central.....	98.7
Buff., Rochester & Pittsburgh	100	Pittsburgh & Lake Erie.....	96.8
Chesapeake & Ohio.....	97	Norfolk & Western.....	98.6
Chicago, Burlington & Quincy	100	Pennsylvania Railroad.....	95
Chicago, Milwaukee & Puget	100	Northern Central.....	98.2
Sound.....	97	Philadelphia, Washington &	
Grand Trunk.....	100	Baltimore.....	99.6
Lehigh Valley.....	100	Cincinnati, New Orleans &	
Lake Erie & Western.....	100	Texas Pacific.....	99.8
Lake Shore & Michigan		Richmond, Fredericksburg &	
Southern.....	100	Potomac.....	100

It would seem that there must be very few railways that are so poor that they could not afford to adopt some system of main-

taining a space interval between their trains. Of course, a high state of discipline is essential to safe operation, even with the block system, but in any given state of discipline operation is safer with the block system than without it.

In view of the fact that the country recently has been suffering from what has been called a "car shortage," it is interesting to find that railway operating officers differ as to whether there actually is a shortage of railway facilities, and if so, as to the extent of it. The consensus of opinion appears to be that the present facilities are inadequate, but that their inadequacy is less than many people believe. Furthermore, the consensus of opinion appears to be that such inadequacy as there is not a shortage of cars, but a shortage of main and terminal tracks. It seems to be thought that if there were more main tracks and larger terminal facilities, and if shippers would more promptly load and unload cars during periods of heavy traffic movement there would be no great difficulty in handling satisfactorily the maximum traffic of each year. The fact that there have been substantial car shortages reported this fall, although the weather conditions have been most favorable for operation, shows that the existing facilities as now used are inadequate to carry the peak of the load. Furthermore, we appear to be just at the beginning of a period of rapid expansion of commerce and industry. It is a fair conclusion, therefore, that, if the congestion of traffic is not to be worse in future years than it has been this year, there will have to be a large increase in the facilities or a marked improvement in their utilization or both.

The frankness, fullness and evident sincerity with which railway executive officers are now disposed to discuss the important problems with which they are confronted is strikingly illustrated by their contributions to the present issue of this paper. If every man of influence in the United States would read and ponder what the railway officers have to say, the general tone of comment on railway affairs would be improved, the policy of regulation of railways would be modified and the relations of railways with their employees, travelers, shippers and the public would be put on a better basis.

CARS AND LOCOMOTIVES BUILT IN 1912.

AS compared with 1911 the number of cars and locomotives built or completed in 1912 shows a gratifying increase, but compared to other years it is not so favorable. The total number of cars built has been exceeded in five of the last 14 years. Moreover the figures this year are taken from returns from the railroad shops in addition to the returns of the builders upon which we have hitherto depended entirely for our output figures. These returns indicate that the total number of freight cars built in 1912 was 152,429; passenger cars, 3,060, and locomotives, 4,915. The figures for 1911 were 72,161 freight cars, 4,246 passenger cars and 3,530 locomotives.

The buying movement has been most satisfactory throughout the year in spite of the prices which are now higher than they have been since 1906. The predictions of a gigantic crop and an accompanying car shortage such as that in 1907 forced the railroads to flood the market with orders as long as delivery could be promised in time to handle the fall traffic. After that the volume of orders was again reduced to a more normal level. By this time, however, the builders were operating at as near their full capacity as was possible and there has been no let up in their activities since. During October and November the volume of orders placed again became exceptionally heavy, and as there are now inquiries for about 50,000 cars the opening months of next year should be good ones for the equipment market.

Of the freight cars built in the past year 148,357 were for domestic service and 4,072 for export. Of the passenger cars, 2,822 were for domestic service and 238 for export. Of the freight cars, 65,250 were of all steel construction or had steel underframes, 18,576 were of all wood construction and 67,603 were not specified. Of the passenger cars, 1,418 were of all

steel construction or had steel underframes, 745 were of all wood construction and 897 were not specified; 215 were electric or subway cars. The following table shows the cars built in the past 14 years:

Year.	Freight.	Passenger.	Total.
1899.....	119,886	1,305	121,191
1900.....	115,631	1,636	117,267
1901.....	136,950	2,055	139,005
1902.....	162,599	1,948	164,547
1903.....	153,195	2,007	155,202
1904.....	60,806	2,144	62,950
1905*.....	165,155	2,551	168,006
1906*.....	240,503	3,167	243,670
1907*.....	284,188	5,457	289,645
1908*.....	76,555	1,716	78,271
1909*.....	93,570	2,849	96,419
1910*.....	180,945	4,412	185,357
1911*.....	72,161	4,246	76,407
1912†.....	152,429	3,060	155,489

*Includes Canadian output.

†Includes Canadian output and equipment built in railroad shops.

Returns from locomotive builders show that 4,915 were built during the year, of which 4,403 were for domestic service and 512 for export. Two hundred and thirty-nine were compound, 3,796 were simple, 212 were electric and 668 were not specified.

Year.	No. Built.	Year.	No. Built.	Year.	No. Built.
1893.....	2,011	1900.....	3,153	1906*.....	6,952
1894.....	695	1901.....	3,384	1907*.....	7,362
1895.....	1,101	1902.....	4,070	1908*.....	2,342
1896.....	1,175	1903.....	5,152	1909*.....	2,887
1897.....	1,251	1904.....	3,441	1910*.....	4,755
1898.....	1,875	1905*.....	5,491	1911*.....	3,530
1899.....	2,475			1912†.....	4,915

*Includes Canadian output.

†Includes Canadian output and equipment built in railroad shops.

CAR CONSTRUCTION IN 1912.

THAT the orders for freight cars and passenger cars placed during 1912 by the railroads and concerns of North America are very satisfactory is shown by the statistics on another page of this issue. The inadequateness of facilities and the exceptionally heavy crops induced the railroads to place heavier orders for rolling stock this year than in any since 1906. The number of freight cars ordered was 234,758 and the number of passenger cars ordered was 3,642. Since we began keeping these records in 1901 the number of freight cars ordered has only been exceeded twice, in 1905 and 1906 when 341,315 and 310,315 were ordered respectively. The number of passenger cars ordered has also been exceeded only twice, in 1909 and 1910, when they were 4,514 and 3,881, respectively.

We have this year for the first time divided up the number of freight cars ordered so as to show the number of the different types. These figures compared with those for 1911 are as follows:

	Box.	Coal.	Flat.	Refrigerator.	Stock.	Tank.	Miscellaneous.
1912.....	107,887	74,505	12,616	19,720	4,951	1,918	13,161
1911.....	60,547	48,243	5,826	11,242	3,128	2,002	2,129

As the heaviest increases in traffic this year have been in the commodities carried in box cars an abnormally large proportion of cars of that type have been ordered. It also appears that the average capacities of the different types of cars ordered have shown heavy increases in 1912 compared with 1911 and 1910. The car which has gained most rapidly in popularity during the present year is most probably the general service car, about 25,000 of which have been ordered since January 1.

The wooden freight car is still being built, but in very small numbers. Steel hopper, gondola and flat cars have become almost standard practice. Several roads have not only definitely abandoned wood for the underframing of box cars, but have introduced steel in the framework of the superstructure to a greater or less extent. One large order for all-steel box cars has been placed during 1912. The Harriman lines have had a number of such cars in experimental service for several years; no trouble has been experienced from sweating or condensation and the cars have given satisfactory service. One car

builder is decidedly of the opinion that all the anticipated troubles with moisture can be overcome by proper ventilation and that heat and cold will be no more detrimental in their effects than they are at present with the metal roofs which are used on wooden cars. He argues for the all-steel box car on the ground that it can be made more rigid than the car of composite construction and that cars so built with steel floors and sides will be proof against grain leakage. This position is fortified by the experience of the Chilian railways where the all-steel box car is the standard of construction and where they are run from the hot climate of the seashore to the low temperatures of the snow-capped Andes in a few hours, and with no injurious effect upon any class of lading.

The Bessemer & Lake Erie has ordered one hundred all-steel box cars, in the faith that they will be especially efficient for the cement trade in which they are to be used. It will be remembered that it was this road, when it was the Pittsburgh, Bessemer & Lake Erie, that gave the first commercial order to Charles T. Schoen for all-steel hopper bottom ore cars of 50 tons capacity and so demonstrated to the country the value of that type of rolling stock. It will be an interesting coincidence if history should repeat itself and this order for steel box cars should serve as a demonstration of their value for general traffic. Be this as it may, there is a widespread opinion that we are on the eve of the definite abandonment of wood and the adoption of steel for box car construction.

An important development in box car construction has been the awakening of those in charge of the purchase of such cars to the fact that more consideration must be given to making them leakage proof, water proof and burglar proof. The reduction of claims for damaged freight will more than offset the additional first cost of the improved cars, and they can be maintained at a lower cost for repairs and renewals. The box car roof has been given closer attention and a few roads have specified several different types of roof in the same order of cars and in sufficient numbers so that a good comparison may be made of service results.

There is also a tendency, at last, to modify truck construction and make it easier to lower the body and thus bring it down so that the line of drawbar pull will be more nearly in line with the center of the sills than it has been possible to make it heretofore.

There is also a decided effort in some quarters, where extra heavy cars have been built, to reduce the weight, the goal apparently being the reduction of the weight of a box car of 80,000 lbs. capacity to 40,000 lbs. or less. The use of an all-steel superstructure will assist in this, as it is possible to build a lighter all-steel car than one of composite construction. The difficulty experienced in this line of designing is that many engineers have designed cars of ample strength to withstand the theoretical stresses to which they ought to be subjected, but that the parts were formed to be quite inadequate to withstand the extraneous stresses to which they are subjected in service. The result of this has been that some builders have declined to bid on cars that they considered to be inadequately designed.

The steel wheel is extensively used on cars of 50 tons capacity, but that use is far from being universal, and some roads that were foremost in using it and which have placed the largest orders for it are still using many cast iron wheels under their high capacity cars. On cars of lower capacity the cast iron is still the standard wheel.

The steel passenger car has entered the field not only to stay but probably to occupy it exclusively; but that time has not yet come, and the principles governing all of the details of its construction have not yet been settled and accepted. It is acknowledged that one of the prime requisites of a suitable construction is stiffness and to this may be added the capability to resist penetration. This latter would add materially to the thickness of the roof sheets which is now about 1/16 in. But this is overruled by the objection to the weight which such a thickness would involve. However, the performance of some of the cars in wrecks has led to thickening the floor sheets. The extraordinary

stiffening of the end construction is not meeting with much approval. It is argued that in the event of a collision something must yield to the dynamic stresses engendered, and that, if the ends of the cars are made strong enough to sustain them, the yielding will be at the center of the car where it will endanger the lives of the passengers. It is better, then, to have the yield point at the ends of the cars. Underframing construction for passenger cars is still in a stage of development and there is no fixed practice. Some roads are using heavy cast steel bolsters and end sills, while others are using pressed or rolled shapes.

It is also felt, in some quarters, that the use of steel for interior finish has been carried to the extreme and that it is an unnecessary elaboration. What is felt to be needed is that a material shall be used which will neither splinter nor ignite in case of a wreck and both of these requisites can be obtained without using steel. Even those roads which insisted most strenuously on an all-steel interior construction are modifying their practice.

LOCOMOTIVE DEVELOPMENT IN 1912.

THE statistics on another page of this issue show that the number of locomotives ordered during 1912 was 4,515. When compared with recent years it will be seen that this volume is very satisfactory as it has only been exceeded three times since we began keeping these records in 1901, namely, in 1902 when 4,665 were ordered, in 1905 when 6,265 were ordered and in 1906 when 5,642 were ordered. The unfilled orders on the books of the builders are much heavier than last year and there are inquiries for about 400 locomotives so the year 1913 will have a good start.

The numbers of the different types ordered in 1912 compared with 1911 are as follows:

	1912.	1911.		1912.	1911.
Mikado	1,309	590	Mogul	61	127
Consolidation ..	858	577	Electric	75	133
Switching	821	443	Shay	23	15
Pacific	594	486	Eight-wheel ...	8	27
Ten-wheel	364	238	Atlantic	5	9
Mallet	168	112	Others	229	93

The year 1912 will stand out in the history of locomotive development, not because of any very radical designs which have been introduced, but more because of the awakening of railroad officers at large, to a more thorough appreciation of the necessity of careful design and better proportioning of parts with a view to the exact service which the locomotive will be called upon to perform. And, as stated by O. S. Beyer, Jr., in the paper recently presented before the American Society of Mechanical Engineers, "the fact that the most powerful locomotives of most approved design are also the most economical."

With the heavier locomotives has come an increase in train loads. The Baltimore & Ohio has increased 26 per cent. within a few years; the Norfolk & Western, 7.75 per cent.; the Chesapeake & Ohio, 15.25 per cent. and the Lehigh Valley 4 per cent., to quote merely a few of many examples. The Virginian is hauling 100 cars in a train, the goal towards which the road has been working, and trains of 5,000 tons are not uncommon elsewhere.

The traffic men are crowding the mechanical department for the last ounce of drawbar pull available, and the powers in control of the finances are looking to this heavy power as a means of obviating or meeting the necessity of reducing grades to lower the cost of transportation. In short, the locomotive is now coming to be regarded in the light of an engineering problem in its broad sense. Designers and operators are considering the machine as a whole, and not looking at it from the limited point of view that has prevailed in the past. This was especially emphasized at the recent meeting of the American Society of Mechanical Engineers where, for the first time in its history, or, for that matter, the first time in this country, details were forgotten and the subject considered on the broad basis of its engineering and economic possibilities. It looks as though the steam locomotive was, at last, coming to its own.

It must be kept in mind that the larger locomotives have been

equipped with the most approved fuel and labor saving devices, while the old standard engines have not always had these aids. There would seem, therefore, to be great possibilities for some of these standard types, if so equipped. For instance, the Pennsylvania Railroad built an Atlantic locomotive with a very large boiler and superheater; after it had been in service for a number of months it was put on the testing plant where it developed a horsepower on a water consumption so far below anything that had ever been attained before, that it cut into the records of what would have been considered good practice for condensing engines in stationary practice a few years ago. Possibly a performance of this sort does not appeal to railway executives when stated in these terms, but when expressed by the statement that a locomotive of a given weight can haul a heavier train over the road in the same or better time than a standard engine, because of the greater steaming or boiler capacity, it cannot be overlooked. And this is what actually occurs when the locomotive is properly proportioned and equipped with the best boiler capacity increasing devices, if they may be so called.

One cannot but have been impressed by the tests which have been reported during the year in which locomotives of the Mallet, Mikado or Pacific types have developed much greater power per unit of weight and fuel consumption than the older standard engines against which they were pitted. As a hauler of freight the Mikado is receiving an extensive application and is outclassing the consolidation, because it permits the use of a larger firebox, and thus greater hauling capacity and higher sustained speed.

The Walschaert valve gear has come into general use on heavy locomotives, although for small locomotives the Stephenson gear is still used. There are, however, some indications that the Baker gear will encroach upon the prestige of the Walschaert gear. It is being somewhat extensively applied, and is possessed of some advantages over both the Walschaert and the Stephenson in that it has no link and that it is possible to standardize the parts so that they are applicable to engines of different types.

In the use and selection of materials, the heat treatment of steel parts bids fair to receive more attention than has yet been given it, and a far wider application. It is an old story, that of raising the elastic limit of a material and then following that rise by a corresponding increase of unit stresses. Now, the problem with the high speed heavy locomotives is to reduce the vertical stresses on the rails, by a reduction in the weight of the reciprocating parts. Work along this line is to be taken up systematically, with the purpose of utilizing all of the reduction in weight that may be so obtained, in lessening the vertical stresses.

But of all the economies that have been effected in locomotive operation, the greater percentage is undoubtedly due to the superheater. And it is because of the evident saving in steam consumption, which it has produced, that it is now generally applied to new locomotives, and that to an extent that almost constitutes it a standard of practice. The most important and interesting development in superheater practice during the year has been its application to switch engines and the resulting elimination of black smoke and reduction in coal and water consumption.

Considerably over 300 mechanical stokers are now in service with a large number on order. It may safely be said that the stoker has passed through the experimental stage, although much is still to be learned in connection with its operation. Generally speaking, the best results are obtained by "starving the fire," or maintaining a fire so thin that the grates can be seen through it at all times. It is something of a problem to educate the fireman to do this. While the introduction of the superheater and the perfecting of the brick arch have reduced the fuel consumption per unit of work so greatly that there is not now the crying need for the stoker that it seemed would insure its general introduction as soon as it was perfected, still there is a wide field for its application and the possibilities are that the year

1913 will see a large number of locomotive stokers installed.

Among the minor details the use of the power and screw reverse gear is extending. Not that the heavy locomotives cannot be handled without it, but its use so reduces the labor of the engineer that it encourages him to work the machine at a more economical point of cut-off than he would be apt to do, if every change involved a violent exertion. In boiler construction we have reached 112 in. for the diameter of the shell and 24 ft. for the length of tubes. As to what the possibilities are beyond this, would be hazardous to say. But while long tubes may not be favored they have to a certain extent been necessitated by the long boiler shells that must be used. The filling of the extra length of the shell with a feedwater heater is not showing all the advantages that were expected, so that, with a space to be filled, the long tubes, with an ample combustion chamber at the rear, is favored in many places.

The most powerful locomotive built during the year was a Mallet for the Virginian. It has a tractive effort, at starting, of 138,000 lbs. Cylinders of the unprecedented diameter of 44 in. are used, and the total weight is 540,000 lbs. Its size, however, would not permit it to be used within the clearance limits of most roads.

The comparative tests of the Jacobs-Shupert firebox and one of the radial stay type at Coatesville, Pa., attracted much attention, but the complete results are not yet available for publication.

An important development for the year 1913 will undoubtedly be a more scientific study of the problem of combustion in the locomotive and modification in the design of the firebox and the practice of firing to take advantage of the knowledge thus gained.

RAILWAY CONSTRUCTION IN 1912.

WHILE the prosperity of the railways is to a large extent reflected by the mileage of new lines and additional main tracks built in any year, such an index is quite inaccurate at the beginning or end of a period of inactivity and depression. The full effects of a general suspension of work are not reflected in the mileage of new lines completed the following year for it is necessary to continue many large projects to completion upon which large sums have already been spent. Likewise following a general resumption of construction work the full effects are not evident until at least the second year, for the larger projects cannot be completed the first season and do not enter into the reports for that year.

The latter condition exists this year. Upon the face of the returns, this has been an unusually dull year in railway construction. The returns gathered from reports made by the railways themselves and from our construction records show that 2,997 miles of new lines have been completed this year exclusive of second, third and fourth main tracks and side tracks. New tracks laid in reconstruction work to replace existing main tracks are also excluded. This is a considerable decrease as compared with 3,066 miles completed last year and 4,122 miles built in 1910, while the average for the 19 years previous to 1912 is 3,842 miles. The completed mileage for this year is less than that for any year since 1897 when 2,109 miles were built.

The effect of fluctuations in the prosperity of the country upon the additions to railway mileage is indicated by a comparison of the mileage completed by five year periods during the last 20 years. The completed mileage reported for the five years 1908-12 inclusive is 17,147 or an average of 3,429 miles per year. For the five year period 1903-07 inclusive, 24,707 miles were built or an average per year of 4,941 miles. For the five years 1898-02 inclusive, 24,122 miles were reported or 4,824 miles per year, while for the period of 1893-97 inclusive, 10,013 miles were built or an average of 2,003 miles per year. From this the effects of the panics of 1893 and 1907 are evident, the completed annual mileage for the last five years being only about two-thirds of that for either of the two preceding periods.

However, these figures are not a true indication of the present activity in railway construction for there is probably more work

under way at present than at any time since 1907. Our records show that over 2,500 miles of new line are at present under construction in the United States and over 2,800 miles additional are definitely projected. The most of this work was started late in the spring and will not be completed until next year. Examples of this are the Chicago, Milwaukee & Puget Sound extension from Lewistown, Mont., to Great Falls, and the new line of the Louisville & Nashville from Nashville, Tenn., to Birmingham, Ala.

As is to be expected, the longest continuous line built this year was in the northwest, being that of the Great Northern between Fargo, N. Dak. and Surrey, 202.4 miles. The Minneapolis, St. Paul & Sault Ste. Marie laid the next longest stretch between Fordville, N. Dak. and Drake, 131 miles. Among the other longer lines built are those of the Wichita Falls & Northwestern between Leedy, Okla., and Forgan, 112 miles; the Lexington & Eastern (L. & N.) from Dumont, Ky., to McRoberts, 100 miles; and the Dodge City & Cimarron Valley (A. T. & S. F.) from Dodge City, Kan., to Hugoton, 89 miles.

The new mileage was divided between 41 states, North Dakota leading with 347 miles; Texas, which has been first for the past three years is second with 336 miles and Oklahoma third with 242 miles. Other states reporting more than 100 miles are Florida 182 miles; Georgia 153; Montana 130; Kentucky 119; Washington 105; Arizona 105; and Idaho 105 miles. The states of Connecticut, Delaware, New Hampshire, New Jersey, New Mexico, Rhode Island and South Dakota, in addition to Alaska report no new lines built during the year.

The mileage of new lines built during a year will of itself become a less accurate guide to the construction activity of the country, as the railways continue to develop and to cover the territory more thoroughly for their energy will be devoted to a continually increasing extent to the construction of second, third and fourth main tracks. During 1912, 1,073 miles of second track, 67 miles of third track, 68 miles of fourth track, 4.65 miles of fifth track and 1.65 miles of sixth track were completed. Illinois led in the mileage of second track built with 149 miles, with Wisconsin second with 107 miles and Kentucky third with 94 miles. New York led in third track with 18.25 miles and Ohio in fourth track with 19.36 miles. The fifth and sixth tracks were built in New Jersey by the Central of New Jersey and the Pennsylvania Railroad.

As with the construction of new lines the amount of second track under way at the present time far exceeds that completed, over 1,150 miles being reported at this time as actually under way. Over 584 miles of this is on one road, the Chicago, Milwaukee & St. Paul between Green Island, Iowa, and Council Bluffs, 315 miles, and between Minneapolis, Minn., and Aberdeen, S. Dak., 268 miles. This road has moved over 15,000,000 yards of earth this season exclusive of work done on the Chicago, Milwaukee & Puget Sound, which has been heavy in itself, practically none of which appears in the reports for this year.

The above figures for new extension and for second track do not include the reconstruction of existing lines such as the heavy work the Delaware, Lackawanna & Western now has under construction from Clark's Summit, Pa., to Hallstead, except in so far as they increase the mileage of the existing tracks which they replace. For this reason much of the heaviest work done does not and cannot appear in a report such as this.

In Canada the rapid development of the past few years still continues. The mileage of new lines completed during this year is 2,232, exceeding that of last year, 1,898 miles. The Grand Trunk Pacific alone completed 608.75 miles exclusive of the National Trans-Continental on which 361.15 miles in addition were completed. The longest single stretch completed by the Grand Trunk Pacific was from Regina, Sask., southeast towards the international boundary 136 miles, while 128 miles was completed on the extension to the Pacific coast from Yellow Head, B. C., west towards Prince Rupert. The Canadian Pacific completed 403.97 miles on the western lines. Two hundred miles of

second track were completed during the year and 74 miles additional are now under construction, on the main line of the Canadian Pacific west from Winnipeg. That this development in Canada and especially in western Canada is not waning is indicated by the fact that over 3,500 miles of new lines are at present under construction and over 1,540 miles additional are definitely projected.

The effects of the disturbances in Mexico are indicated by the decrease in the completed mileage for this year. A total of 212 miles of new lines was completed during 1912 as compared with 351 miles in 1911.

Continued progress has been made in the electrification of existing steam roads. The New York, New Haven & Hartford announced early in the spring that the existing electrification between New York and Stamford, Conn., would be extended to New Haven, a distance of 40 miles, making a total distance for electric operation of 73 miles from New York. Construction work on this project is now well advanced. The Butte, Anaconda & Pacific commenced work this year on the electrifying of its main line between Butte, Mont., and Anaconda, 26 miles, and 13 miles of yard tracks, while the Denver & Rio Grande has recently announced its intention to electrify its main line from Salt Lake east to Helper, 114 miles, during the first half of 1913. The New York, Westchester & Boston line, an electric subsidiary of the New York, New Haven & Hartford, the construction of which was reported complete last year, was placed in operation during the present year.

The details of the new mileage and the second, third and fourth tracks are given elsewhere in this issue. The following table shows our figures for mileage built in the United States during the last 20 years:

1893.....	3,024	1900.....	4,894	1907.....	5,212
1894.....	1,760	1901.....	5,368	1908.....	3,214
1895.....	1,428	1902.....	6,026	1909.....	3,748
1896.....	1,692	1903.....	5,652	1910.....	4,122
1897.....	2,109	1904.....	3,832	1911.....	3,066
1898.....	3,265	1905.....	4,388	1912.....	2,997
1899.....	4,569	1906.....	5,623		

RECEIVERSHIPS AND FORECLOSURE SALES.

ALTHOUGH there was a greater number of receiverships in 1912 than in 1911, there was no important railroad sold under foreclosure this year, and the Kansas City, Mexico & Orient and the Denver, Northwestern & Pacific and the Pere Marquette were the three most important roads put into the hands of receivers. As would be expected, the mileage of roads sold under foreclosure is comparatively small. The one large road that went into the hands of receivers in 1911 was the Wabash, and the reorganization of this property will take some time. With the return of prosperity, the prospects of better crops and a generally more hopeful feeling, it was natural that there should be a cleaning up of small roads, and this accounts largely for the number of foreclosure sales.

Foreclosure sales, unlike receiverships, do not necessarily indicate an unprosperous year. They may be the result either of a return to prosperity and a more optimistic feeling on the part of promoters who are willing to take up again the work of projects that have heretofore proved failures, or they may indicate, as in the case of the large number of foreclosure sales in 1902 and the two following years, a recognition of the fact that certain properties must be capitalized on a permanently lower basis. In 1912 the unimportant and comparatively small mileage involved in the foreclosure sales indicate that the number is due rather to brighter hopes than to an acceptance of a period of depression.

The two important receiverships in 1912 had much in common. The Kansas City, Mexico & Orient was a road which was financed through the means of a construction company and the United States & Mexican Trust Company. Although the construction company succeeded in getting quite a number of fairly wealthy men to invest money, the railroad company itself was built largely through money raised from comparatively small investors by direct application, much as subscriptions would be

raised for a life insurance company. The president of the road, E. A. Stilwell, was a former life insurance man, and it was due very largely to his individual efforts that the bonds of the company were sold largely abroad. With the increased difficulties in interesting capital in new railroad enterprises, Mr. Stilwell found himself unable to raise further money, and with the increase in price of money he found himself unable to sell the bonds taken by the construction company in payment for work done on the railroad. When a period of depression came this road, which was built in opposition to existing roads and without strong, regular banking connections, was unable to meet changed condi-

RECEIVERSHIPS ESTABLISHED IN 1912.

Name of Company.	Railroad Mileage.	Funded Debt.	Stock.
Denver, Lar. & North Western.....	56	\$1,500,000	\$24,243
Denver, North Western & Pacific.....	211	11,288,609	10,940,700
Florida Central.....	48	500,000	50,000
*Kansas City, M. & O.....	764	21,146,000	25,000,000
†Kansas City Outer Belt.....	...	...	...
Laramie, Hahn's Peak & Pacific.....	110	3,940,000	9,100,000
Pere Marquette.....	2,331	63,672,000	26,186,590
Pittsburgh & Susquehanna.....	22	390,000	264,000
Register & Glenville.....	37	...	...
§Seattle, Renton & Southern.....	19	1,250,000	725,000
Western Allegheny.....	50	150,000	1,511,110
¶Winnipeg, Salina & Gulf.....	...	...	...
Wisconsin & Michigan.....	136	3,518,245	956,000
Total.....	3,784	107,354,854	\$74,757,643

*Includes also the K. C. M. & O. of Texas.

†A subsidiary of the K. C. M. & O. under construction.

§The mortgage debt which was foreclosed and which was not in the form of bonds amounted to \$215,000. This company was not incorporated.

¶Operated by motor cars.

It turned out that this company, for which a receiver was appointed, never had any railroad or practically any other assets.

tions, and although the company got through the panic times of 1907-8, it could not continue and raise new capital.

The Denver, Northwestern & Pacific was another line built in opposition to existing roads, without eastern banking connections and financed through the individual efforts of its president, D. H. Moffat. Undoubtedly the death of Mr. Moffat had something to do with the receivership of his road; but many of the conditions that forced the Kansas City, Mexico & Orient into the hands of a receiver applied equally to the Denver, Northwestern & Pacific.

The receiverships of these two roads mark the failure of independent interests, even when strongly backed by local capital, as was Mr. Moffat, to build a railroad of any considerable length when unbacked either by eastern banking interests or by an old established railroad company. It is hard to say how large a part in the failure of these two enterprises the changed attitude toward railroads has played, or how large a part simply general changed

FORECLOSURE SALE IN 1912 OF STEAM ROADS.

Name of Company	Railroad Mileage.	Funded Debt.	Stock.
Argentine Central.....	16	\$200,000	\$500,000
Artesian Belt.....	42	...	70,000
Birmingham & Gulf Ry. & Nav.....	50	400,000	5,500,000
Chicago, Peoria & St. Louis.....	255	3,730,300	7,350,000
Enid, Ochiltree & Western.....	10	...	181,990
Iron Mountain & Green Brier.....	18	35,000	50,800
*Lancaster, Oxford & Southern.....	28	200,000	200,000
Marquette, Tomahawk & Western.....	23	...	161,500
Macomb & Western Illinois.....	20	...	25,000
Oklahoma Central.....	136	3,180,000	3,112,500
Overton County Railroad.....	21	250,000	250,000
†Pascagoula Northern.....	42	...	523,900
Total.....	661	\$7,995,300	\$17,925,690

*Road sold by receivers, September 21, to Frederick S. Williams. Receiver appointed March 4, 1911.

†New name—Pascagoula-Moss Point Northern.

conditions has had to do with this failure. Both causes undoubtedly have had a distinct effect. When Mr. Stilwell began building the Kansas City, Mexico & Orient, and when Mr. Moffat began the Denver, Northwestern & Pacific, their attitude simply reflected that of many private investors who were optimistic for

railroad development, who believed that there was money in it, and who were willing to risk their own money in such speculation, for speculation it is, regardless of the theories of the state railroad commissions or the Interstate Commerce Commission. In the case of both Mr. Moffat and those whom Mr. Stilwell interested, they went in so far as to be unable to get out; and when public opinion changed and the conditions changed, they could not get others to go in with them. Old established railroad companies may still be able to sell their bonds on a 4½ to 5 per cent. basis. Money for new railroad construction, except it be backed by the credit of these old companies, cannot be raised at any "reasonable" or, as far as that is concerned, any reasonable rate. Mr. Moffat had a large personal fortune, which he used freely in helping his road in its difficulties, and Mr. Stilwell had ingenuity that amounted almost to a fortune in itself; and he gave freely of this in trying to keep the Kansas City, Mexico & Orient on a going basis.

The receivership of the Pere Marquette had nothing particularly to do with the year 1912 except that it happened in that year. When the Cincinnati, Hamilton & Dayton was sold to J. P. Morgan & Company it had taken on the burden of the Pere Marquette, but when the Morgan interests sold the Cincinnati, Hamilton & Dayton to the Baltimore & Ohio they were not able to get rid of the Pere Marquette at the same time. The road's credit was exhausted and the problems of operation were very severe. A hard winter added to the operating costs and a receivership followed. The underlying causes of the receivership date back many years, although legislation in Michigan and public hostility to railroads probably were contributing causes.

SUMMARY OF FORECLOSURE SALES IN 37 YEARS.

Year.	No. of roads.	Miles.	Bonds and stocks.
1876.....	30	3,840	\$217,848,000
1877.....	54	3,875	198,984,000
1878.....	48	3,906	311,631,000
1879.....	65	4,909	243,288,000
1880.....	31	3,775	263,882,000
1881.....	29	2,617	137,923,000
1882.....	16	867	65,426,000
1883.....	18	1,354	47,100,000
1884.....	15	710	23,504,000
1885.....	22	3,156	278,394,000
1886.....	45	7,687	374,109,000
1887.....	31	5,478	328,181,000
1888.....	19	1,596	64,555,000
1889.....	25	2,930	137,815,000
1890.....	29	3,825	182,495,000
1891.....	21	3,223	169,069,000
1892.....	28	1,922	95,898,000
1893.....	25	1,613	79,924,000
1894.....	42	5,643	318,999,000
1895.....	52	12,831	761,791,000
1896.....	58	13,730	1,150,377,000
1897.....	42	6,675	517,680,000
1898.....	47	6,054	252,910,000
1899.....	32	4,294	267,534,000
1900.....	24	3,477	190,374,000
1901.....	17	1,139	85,808,000
1902.....	20	693	39,788,000
1903.....	13	555	15,885,000
1904.....	13	524	28,266,000
1905.....	6	679	20,307,000
1906.....	8	262	10,400,000
1907.....	6	114	13,777,000
1908.....	3	138	2,547,000
1909.....	12	2,629	250,033,000
1910.....	17	1,100	93,660,109
1911.....	13	1,386	40,741,453
1912.....	12	661	25,910,990
Total, 37 years....	988	119,867	\$7,306,814,652

SUMMARY OF RECEIVERSHIPS FOR 37 YEARS.

Year.	No. of roads.	Miles.	Bonds and stocks.
1876.....	42	6,662	\$467,000,000
1877.....	38	3,637	220,294,000
1878.....	27	2,320	92,385,000
1879.....	12	1,102	39,367,000
1880.....	13	885	140,265,000
1881.....	5	110	3,742,000
1882.....	12	912	39,074,000
1883.....	11	1,990	108,470,000
1884.....	37	11,038	714,755,000
1885.....	44	8,836	385,460,000
1886.....	13	1,799	70,346,000
1887.....	9	1,046	90,318,000
1888.....	22	3,270	186,814,000
1889.....	22	3,803	99,664,000
1890.....	26	2,963	105,007,000
1891.....	26	2,159	84,479,000
1892.....	36	10,508	357,692,000
1893.....	74	29,340	1,781,046,000
1894.....	38	7,025	395,791,000
1895.....	31	4,089	369,075,000
1896.....	34	5,441	275,597,000
1897.....	18	1,537	92,909,000

Year.	No. of roads.	Miles.	Bonds and stocks.
1898.....	18	2,069	138,701,000
1899.....	10	1,019	52,285,000
1900.....	16	1,165	78,234,000
1901.....	4	73	1,627,000
1902.....	5	278	5,835,000
1903.....	9	229	18,823,000
1904.....	8	744	36,069,000
1905.....	10	3,593	176,321,000
1906.....	6	204	55,042,000
1907.....	7	317	13,585,000
1908.....	24	8,009	596,359,000
1909.....	5	859	78,095,000
1910.....	7	735	51,427,500
1911.....	5	2,606	210,606,882
1912.....	13	3,784	182,112,497
Total, 37 years...	737	136,156	\$7,814,672,879

UNION PACIFIC.

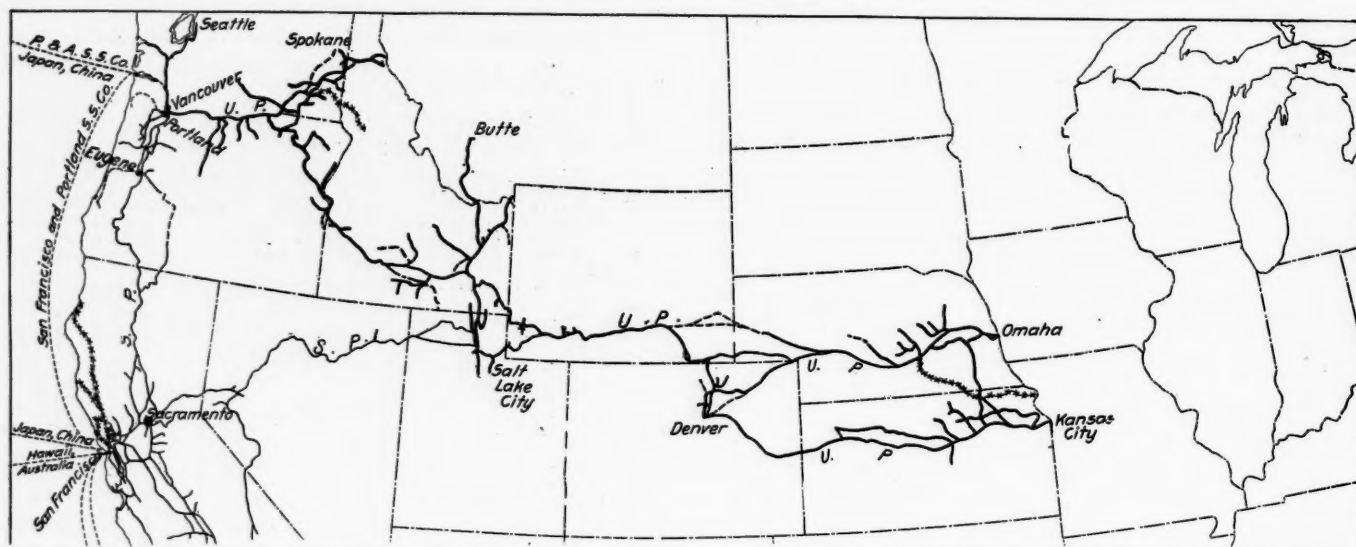
THE \$126,650,000 Southern Pacific common stock, which gives the Union Pacific its control of the Southern Pacific, is owned by the Oregon Short Line, and \$108,000,000 of it is deposited under the Oregon Short Line Railroad Company 4 per cent. refunding mortgage bonds of 1904, of which \$100,000,000 are authorized and of which \$45,000,000 are outstanding in the hands of the public, the remaining \$55,000,000 being owned by the Union Pacific.

In 1911 the income received by the Union Pacific for its investment in Southern Pacific was \$7,599,000, and the interest on the Oregon Short Line 4's was \$1,800,000. If the entire income from Southern Pacific had been lost to the Union Pacific, and

more than earned its dividend in 1912 without any income from the Southern Pacific is a fact based on such an assumption. If 1912 had been a particularly prosperous year, and the report for that year had been a particularly good showing, such an assumption as this might not be of a great deal of importance in forecasting the future, but the reverse was the case.

The Union Pacific and auxiliary companies, which include the Union Pacific Railroad, the Oregon Short Line Railroad and the Oregon-Washington Railroad & Navigation Company, operate a total of 7,389 miles of railroad, with 884 miles of additional main track and 2,272 miles of sidings. The main line of the Union Pacific Railroad runs from Omaha to Ogden, and the Oregon Short Line and the Oregon-Washington Railroad & Navigation Company run from Granger and Ogden to Portland with almost innumerable auxiliary lines. The direct connection with San Francisco is made by the Central Pacific, which is controlled by the Southern Pacific and runs from Ogden to San Francisco. The report of the U. P. shows the operations of the 7,389 miles of road operated by the three companies, known as the Union Pacific and auxiliary companies, and all offsetting accounts as between these companies are eliminated.

In 1912 the Union Pacific earned \$85,978,000 gross, including earnings from outside operations. This is \$3,005,000 less than the gross in 1911, and is a decrease of 3.38 per cent. Notwithstanding the decrease in gross, which was the result of a



The Central Pacific Connection to San Francisco is Shown.
The Union Pacific and Auxiliary Lines.

the only saving made had been the saving in interest on Oregon Short Line 4's, the U. P. would still have earned in the fiscal year ended June 30, 1912, 11.2 per cent. on its common stock; or, as far as that is concerned, even without the saving in Oregon Short Line 4's, the showing for the U. P. common stock would have been slightly in excess of the 10 per cent. dividend requirements, namely, 10.37 per cent.

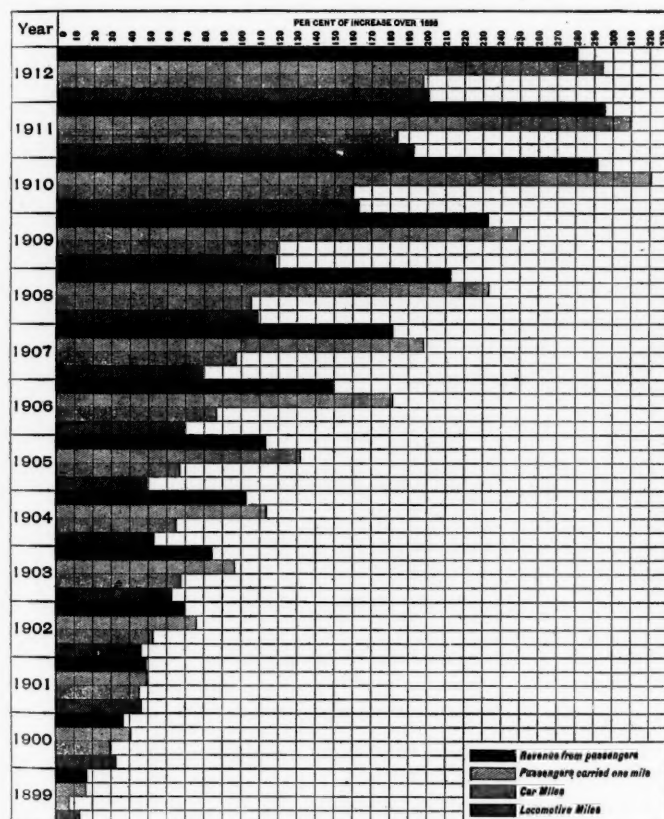
Of course, the loss of income from the investment in Southern Pacific without resulting compensations is inconceivable. Naturally, however, the chief interest in the annual report of the Union Pacific, coming out as it did so shortly after the announcement by the Supreme Court of its opinion finding that the control of the Southern Pacific by the Union Pacific was in restraint of trade and ordering the separation of the two companies, lies in the information that it may afford as to what may be expected to result from the carrying out of this order. Speculation as to what may or may not be done with Southern Pacific stock is hardly worth while, but it is of interest and worth while to examine certain facts in regard to the Union Pacific income and assets based on estimates which will be minimums regardless of what is done under the court's orders with the investment in Southern Pacific. The fact that the Union Pacific would have

decrease of 1.61 per cent. in ton mileage carried, of 3.77 per cent. in revenue passenger mileage, of 1.40 per cent. in the average ton mile rate, and of 0.05 per cent. in the passenger mile rate, there was an increase in total operating expenses of 1.17 per cent., expenses amounting in 1912 to \$50,389,000. The increase in expenses was but \$626,000, but there was an increase of \$505,000, or over 26 per cent., in taxes, making the total amount of taxes in 1912 \$4,369,000. After paying fixed charges, which were larger by \$1,697,000 than in 1911, there was \$34,040,000 applicable for dividends, and after the payment of 4 per cent. on the preferred and 10 per cent. on the common, there was a surplus of \$8,394,000, comparing with a surplus of \$14,334,000 in 1911. As was pointed out, the surplus in 1912 was a little larger than the total income from Southern Pacific stock.

Aside from the increase of taxes, which is out of all proportion to the increase in mileage, and seems on its face out of reason, the causes for the rather heavy decrease in net earnings were, in the first place, a shortage in crops, with a resulting decrease not only in products of agriculture carried, but also of other business, which varies in direct ratio with the prosperity of agricultural interests; secondly, a rather large mileage of new line was opened, the average mileage operated in 1912

being greater by 472 miles, or 7.06 per cent., than that operated in 1911—this new mileage, operating, when compared with the old mileage, on a very high ratio, tending to bring up the ratio of expenses to revenue on the entire system; lastly, the Union Pacific had to deal with a strike of machinists, and although the outcome of this strike was a victory for the company, its cost was heavy.

The total expenses of operation amounted to 57.65 per cent. of total operating revenues in 1912, as compared with an operating ratio of 54.94 in 1911. Maintenance, including both way and structures, consumed 23.05 per cent. of revenues in 1912, as against 22.54 per cent. in 1911, and transportation, including traffic and general expenses, consumed 34.60 per cent. of total operating revenues in 1912, as against 32.40 per cent. in 1911. Compared to the sums spent on maintenance in recent years on the Union Pacific, there was a considerable cut in the amounts spent on these accounts in 1912. Maintenance of way and structures cost \$9,595,000 in 1912, or \$851,000—8.14 per cent.—less than in 1911, while there was over 470 miles more road to be maintained, although maintenance on the new lines is



Showing Per Cent. of Increase Over 1898.

Passenger Service and Traffic.

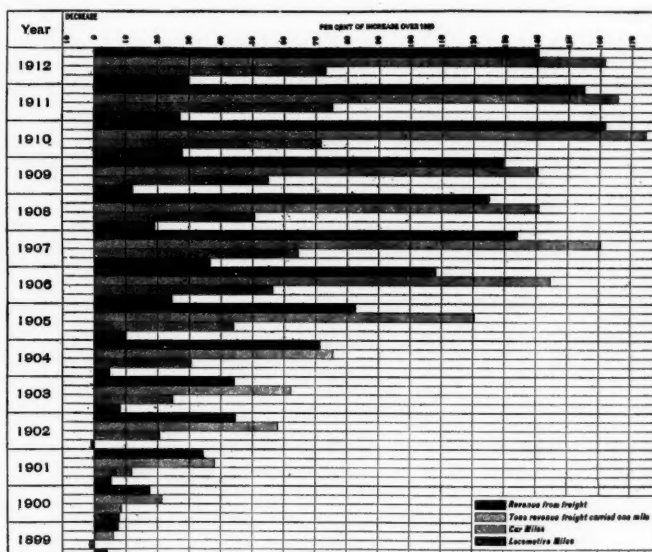
probably very small. Maintenance of equipment cost \$9,812,000, which is more by \$603,000, or 6.55 per cent., than in 1911; but it must be remembered that, included in these charges for maintenance of equipment are the costs, in good part, of the strike, so that although more money was actually spent, it is very doubtful whether the standards of maintenance were as high as the year before. On a good many roads a cut as heavy as that shown in maintenance of way and structures would probably mean pretty heavy deferred maintenance charges. On the Union Pacific it means that last year there was not the same amount of fat put back into the property that it has been the custom to put in during recent years.

The cut, therefore, in maintenance expenses being an offset, as it were, to the usual conditions of operation and of business, does not impair the deduction made from last year's report that even without an income from the Southern Pacific, the U. P. has demonstrated its ability to at least earn its dividend.

Of course, since the courts will not deprive the U. P. of its property without compensation, such an assumption as we have made, as was previously pointed out, is only a minimum foundation on which to base an estimate of what the company's earnings may be after the orders of the court have been carried out.

The Union Pacific's operating ratio is notably low. It is the lowest of any of the large railroad systems in the West, and this despite the fact that the sums spent, based on any unit that we may take for maintenance, are high. For instance, there was spent for maintenance of way and structures \$1,208 per mile of main tracks even in 1912; and repairs, renewals and replacements of locomotives cost on an average \$3,724; of passenger train cars, \$974, and of freight train cars, \$92. Notwithstanding shop conditions in the early part of the year, the average number of locomotives in serviceable order in 1912 was 1,319, as against 1,194 in 1911; of passenger train cars, 1,013 in 1912, as against 888 in 1911, and of freight train cars, 29,684 in 1912, as against 27,395 in 1911.

Transportation expenses were affected by the strike as well as were maintenance of equipment expenses and were 3.18 per cent. greater in 1912 than in 1911. However, the total transportation expenses, traffic expenses and general expenses were but 34.60 per cent. of total operating revenues last year. The reason for this low ratio of transportation expenses to total operating revenues is that the Union Pacific's operating efficiency, as indicated by its



Showing Per Cent. of Increase Over the Year 1898.

Freight Service and Traffic.

train load, ratio of locomotive miles to ton miles, carloading, etc., is high; that its ratio of passenger business to freight business is not high, and finally that its average ton mile receipts are high and its average passenger mile receipts fairly high. The revenue train load in 1912 was 425 tons, and the total train load was 544 tons. There was a decrease of 16.53 tons per train in revenue freight, with a slight increase in tonnage of company freight, so that the total train load was less by 2.68 per cent. in 1912 than in 1911. The Union Pacific's freight density—tons of freight carried one mile per mile of road—was 1,022,000 tons. The average haul in 1912 was 381 miles, which is nearly 11 miles shorter than the average haul in 1911, and it was this shorter average haul that made the reduction in ton mileage, the total revenue tonnage carried amounting to 14,981,000 tons, or 1.17 per cent. more than in 1911.

The ratio of loaded car mileage to total freight car mileage was 75.21 per cent. in 1912, and 74.93 per cent. in 1911. Car loading averaged 22.40 tons in 1912, and 22.33 tons in 1911. All of these operating statistics bear evidence of the high state of development that the great transportation machine has been brought to, and nearly all of them, when compared with 1911 figures, show the results of adverse conditions last year, all of

which goes to bear out the assumption with which these comments began, namely, that the showing made in 1912 may fairly be taken as a minimum basis on which to estimate the prospects of the near future.

Besides this question of the possible effect on income of the Supreme Court's adverse decision there naturally arises the question as to what effect the withdrawal of the Southern Pacific stock from the U. P. treasury would have on the value of U. P. stock figured intrinsically. Again, speculation as to what may or may not be done with Southern Pacific stock can be laid aside and an estimate of Union Pacific assets made based on an absolute minimum, disregarding in this estimate the company's own figures for cost, as shown by its balance sheet. Assume that the railroad and its equipment are worth the capitalized value (at $4\frac{1}{2}$ per cent.) of the net operating income, after the payment of taxes, for 1912. This would amount to \$693,764,700 for the road and equipment. Assume that the Southern Pacific stock, which will be disposed of under the court's order, brings in money enough only to pay off the Oregon Short Line 4's, for which it is part collateral; and taking the Southern Pacific bonds held at par, current assets at the value at which they are shown on the balance sheet, disregarding entirely deferred assets and contingent assets; and taking investment stocks, excluding Southern Pacific, at their present market value, bonds held at par, and disregarding entirely "stocks owned of other companies," total assets at the end of 1912 amounted to \$994,108,000, while total liabilities, including preferred stock at par, amounted to \$458,650,000. This would leave the value of common stock at \$535,457,000, or \$247 per share, par value \$100. The present market price of Union Pacific is in the neighborhood of \$160.

It is hard to see where this calculation has been anything except ultra-conservative, with the exception of the method of making a valuation of the plant and equipment, in which case an attempt was made to get as near a real value—which could be approximated—as possible, rather than to make an obvious misstatement of fact. Wherever the values of assets were in doubt they have been disregarded and entirely left out of the calculation, and where, for instance, as in the case of bonds of the San Pedro, Los Angeles & Salt Lake, it is not possible to get a market quotation, they were taken at a figure that was certainly conservative, namely, 50.

Since the close of the fiscal year the Union Pacific has been sharing in the marked general return to prosperous conditions. During the three months of July to September, inclusive, total operating revenues amounted to \$25,318,000, or \$1,841,000 more than in the corresponding three months of 1911, and operating expenses and taxes amounted to \$13,898,000, an increase of \$672,000. Net income, therefore, amounted to \$11,420,000, or over 11 per cent. more than in the three months of the year for which the annual report was made.

The following table shows the principal figures of operation in 1912, compared with 1911:

	1912	1911.
Average mileage operated	7,150	6,678
Freight revenue	\$57,483,558	\$59,964,364
Passenger revenue	20,207,257	20,981,405
*Total operating revenues	85,977,609	88,983,108
Maint. of way and structures...	9,594,538	10,445,203
Maint. of equipment	9,812,175	9,208,725
Traffic expenses	2,119,603	2,021,492
Transportation expenses	24,755,109	23,991,335
General expenses	2,251,895	2,241,017
*Total operating expenses	50,389,407	49,807,834
Taxes	4,368,789	3,464,147
Net operating income.....	31,219,413	35,711,127
Gross income	50,115,918	54,354,716
Net income	34,039,993	39,975,761
Dividends	25,646,483	25,641,316
Surplus	8,393,511	14,334,446

*Includes in revenues and also in expenses outside operations.

*These include stocks other than investment stocks, as, for instance, stock of the McKeon Motor Car Co., Pacific Fruit Express, San Pedro, Los Angeles & Salt Lake, Union Pacific Land Co., etc., and have a total par value of \$42,316,665.

Letters to the Editor.

RECORDS OF SIGNAL PERFORMANCE.

Troy, N. Y., December 17, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Who is the Signal Engineer who writes in your issue of December 13 claiming that automatic signals are inferior to the manual system, and averring that your own discussions of signaling and automatic stops have been incomplete? How is it that you print this letter without replying to this accusation? I am only a student, but in reading your columns I have got the impression that automatic signals are safer than the ordinary manual system. On one occasion not long ago I think you said that a certain record showed the manual system as having 35 times as many false clear indications as the automatic. The government accident bulletins, so far as I have seen, have not given any comparison of automatic versus manual block signals. Where are the records which show the inferiority of the manual system?

Again, I do not understand how the law of chance should be a bigger factor in automatic than in manual block signaling, other things being equal. Does your correspondent mean simply that with the short block sections which are almost universal in automatic block signaling it is possible to have a large number of signal failures which do no harm, because trains so soon get out of a block section, whereas in manual blocking the block sections are so long that trains are more likely to get caught?

Is not the true basis for comparison the performance of the signals as related to the number of train movements? Has your correspondent any comparison to offer from actual service which will throw light on this aspect of the matter?

On the subject of automatic stops also, your correspondent should give us his facts. I have taken pains to make some inquiries, and I am informed that on the subway and tunnel lines the tests of the automatic stops show 100 per cent. of operative efficiency for long periods of time. I had occasion recently to inform myself about the automatic stops in use on the lines of the Washington Water Power Company, the electric line in the state of Washington recently referred to by you, where the apparatus has been in use about two years, and I get favorable testimony from there also.

The device used on that road is a glass tube, on the roof of the car, which is broken if a stop signal is passed; and the fracture of the glass liberates the compressed air and applies the brakes. The tubes are called "bottles." A supply of bottles is kept at the different transmission stations and at stations on the line. Every bottle must be accounted for and severe discipline is applied for the breaking of bottles; for a break means that a stop signal has been passed. There have been a few cases of stop signals being overrun. Each motorman is charged up with bottles put in his charge, the bottles being numbered. The men handling the apparatus, without exception, speak well of it.

Again, if we are to consider the whole subject of automatic stops broadly, we must heed the testimony of the railway men using the stops relative to the value of this adjunct as a means of discipline. In your account of the stops on the Interborough Rapid Transit Lines, September 20, page 507, you said that the stop apparatus, even where of little or no use as a preventive of collisions, was highly valued by the officers of the road as a means of compelling motormen always to stop at stop signals. A statement of this kind is very significant. It outweighs any amount of negative testimony.

OBSERVER.

NEW LINE FOR RHODESIA.—The Blinkwater Railway has decided upon a survey of the route between Umvuma and Odzi in southern Rhodesia. If this line is built it will reduce the railway distance from Bulawayo to the sea (Beira) by 150 miles.

RAILWAY OFFICERS ON THE SITUATION.

Many Favor a Wage Commission. Optimistic About Business.
What is Needed for Transportation Safety and Adequacy.

In accordance with its annual custom, the *Railway Age Gazette* has sent out to a number of railway executive officers inquiries regarding their views on the present railway situation and the outlook. A number have responded to our inquiries, and our questions and their answers are given below.

QUESTION 1.—THE BOARD WHICH ARBITRATED THE CONTROVERSY BETWEEN THE EASTERN RAILWAYS AND THEIR ENGINEMEN RECOMMENDED THE CREATION OF A PERMANENT NATIONAL WAGE COMMISSION TO ARBITRATE DIFFERENCES BETWEEN RAILWAYS AND THEIR EMPLOYEES IN ORDER TO PREVENT STRIKES ON RAILWAYS AND SECURE ADJUSTMENTS OF WORKING CONDITIONS AND WAGES THAT WILL PROTECT THE RIGHTS AND INTERESTS OF THE ROADS, THE EMPLOYEES AND THE PUBLIC. WHAT DO YOU THINK OF THIS PLAN?

CHICAGO, INDIANAPOLIS & LOUISVILLE.—I am in favor of the adjustment of railway wage schedules by the governmental authority which fixes rates.—*Fairfax Harrison, President.*

CHESAPEAKE & OHIO.—It is quite doubtful whether the railway employees will accept a permanent national wage commission to arbitrate differences between the railways and their employees. It is quite necessary, however, that there should be some method by which the general stoppage of work covering an entire territory can be prevented.—*Geo. W. Stevens, President.*

CHICAGO GREAT WESTERN.—The appointment of an impartial permanent board free from political influence to protect the rights of the railways, the employees and the public in the adjustment of working conditions and wages would simplify some of the present complications; but such a board must also safeguard the rights and interests of the investor if the public desires the railways to provide facilities required by our business expansion.—*W. A. Garrett, Vice-President.*

CHICAGO, ROCK ISLAND & PACIFIC.—I am of the opinion that the interest of the public demands that there be some method adopted of settling differences between transportation companies and their employees, other than by strikes. I believe an arbitration board is the solution likely to be adopted. My own view is that the same commission that regulates the freight and passenger rates should also have a hand in settling these demands for increased compensation on the part of employees. I do not think that it is necessary that this arbitration should be compulsory, as I believe neither side would refuse to abide by a decision of such a board.—*H. U. Mudge, President.*

ERIE.—I am in favor of a plan that would result in changing present conditions, which are that railway employees and the companies are at intervals dealing with the strike question. Threats to tie up railway transportation to attain the desired conditions are frequently made. Willing-to-be strikers ignore the rights of the public. A process that will protect the right of the public to uninterrupted transportation and prevent strikes and lockouts should be welcome. The general plan proposed by the Arbitration Board is the best yet proffered.—*F. D. Underwood, President.*

ERIE.—Am heartily in favor of it.—*J. C. Stuart, Vice-President.*

ILLINOIS CENTRAL.—The recommendation of the Arbitration Committee for the creation of a permanent national wage commission amounts to compulsory arbitration. There is absolutely no question as to the desirability of this disposition of the wage question. The practicability of bringing it about, is, I presume, the subject you wish discussed. It seems to me utterly impossible, under our present form of government. It obtains under

no form of government unless perhaps in Russia. It is but approached in some foreign countries by calling into the army reserves the railroad employees to prevent their striking until matters in controversy can be adjusted. The Lemieux act in Canada contemplates the postponement of hostilities in their wage controversies, when they become acute, until public investigation can be made. Such investigations, influenced by political conditions, have been prejudicial to railroad interests. Recently the law was ignored and a strike occurred, in violation of its requirements, indicating even the weakness of that government to enforce tentatively compulsory arbitration. The Interstate Commerce Commission would probably be the most natural body through which to arbitrate wages. It regulates rates, safety appliances, and is approaching a regulation of the discipline in that it has criticised the rules and methods of present operation. If it can write better rules and suggest better methods than the managers know of, it can also regulate working conditions and wages, which have much to do with the discipline. I do not apprehend it will seek for an extension of power to this extent. Whether or not it can be forced upon it as a servant of the people is an open question.—*W. L. Park, Vice-President.*

MISSOURI PACIFIC.—Until there may also be provision insuring the revenue from which awards if made, may be paid, compulsory arbitration is inequitable to the railways. As the public, and the employees through concerted movements, have invariably obtained from the railways during recent years all to which they are justly entitled, and as the best business arrangements result from careful negotiations, the public, the employees, and the railways, will be protected by enforced public mediation and benefited by the resulting support of public opinion. Such mediation is desirable.—*E. J. Pearson, First Vice-President.*

NEW YORK CENTRAL LINES.—I approve of the recommendation made by the board which arbitrated the controversy between the eastern railways and their engine-men, that a permanent national wage commission be created for the purpose of arbitrating differences between railways and their employees.—*W. C. Brown, President.*

NORFOLK & WESTERN.—The recommendations made by the board which arbitrated the controversy between the Eastern railways and their engine-men for the creation of a permanent wage commission to arbitrate differences between railways and their employees in order to prevent strikes on railways and secure adjustments of working conditions and wages that will protect the rights and interests of the railroads, the employees and the public, are along the right lines. Compulsory arbitration is not consistent with our form of government. A commission, however, formed by the government in a proper and judicious manner with a reasonable amount of power, would practically make arbitration compulsory, as public opinion would be so strong against either side that refused to accept the aid of such a commission to settle controversies that it would lose its case before it was begun.—*L. E. Johnson, President.*

NORFOLK & WESTERN.—Some such action as recommended by the arbitration board handling the controversy between the Eastern railways and their engine-men ought to be worked up in the shape of legislation, creating a commission, providing that no public utility corporation could be stopped by either owners or employees, but in the end, if failure of settlement by the owners and their employees, take the matter up by some such body as suggested. Compulsory arbitration to me seems impossible, and I can see great difficulty in framing a law providing for it. Something should be worked out so that the railways, employees and their families, and the business communities along the railroads would know that no wage controversy would lock

up and bring to a standstill the large interests involved.—*N. D. Maher, Vice-President.*

ST. LOUIS & SAN FRANCISCO.—Let me say I am confident of the necessity of a permanent wage commission, so constituted, and authorized as to actually prevent railway strikes. I said at Peoria last spring that we would yet see the day when neither railway officials, nor railway employees would be permitted to allow differences to reach that stage, and I likened a railway strike to mutiny at sea. I still have the same opinion.—*B. L. Winchell, President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—While I have not yet seen the full report of the board which arbitrated the controversy between the Eastern railways and their engineers, only having read the brief accounts in the newspapers, I am in favor of some sort of permanent national wage commission to arbitrate the differences between the railways and their employees, in order to prevent strikes and secure adjustments of working conditions and wages that will protect the rights and interests of the roads, their employees and the public. As at present, there is one continual round of requests from the various labor organizations for wage increases, and a road no sooner gets through with one committee before another is waiting upon it, and not the least of the disadvantages of this situation is the time it takes of the chief operating officials meeting with these various committees. I am of the opinion that inasmuch as the Interstate Commerce Commission has the legal authority and has taken advantage in full of its legal rights to regulate the income of railroads, it should take the equal responsibility of regulating the wage expenses of railroads; and I therefore believe that a permanent national wage commission should be composed of representatives from the railroads, from the labor union officials and members of the Interstate Commerce Commission.—*J. Ross Clark, Second Vice-President.*

UNION PACIFIC AND SOUTHERN PACIFIC.—I think the recommendation of the board that arbitrated the controversy between the Eastern railways and their engineers, to create a permanent national commission to arbitrate differences between railways and their employees in order to prevent strikes, is eminently sound and should be put in effect by Congress. Our Canadian neighbors have in successful operation a law creating a board for the settlement of labor disputes, the duty of which is to make public all matters liable to cause trouble between the railways and their employees when they arise, thereby affording the public ample time and opportunity to form an opinion as to their merits. Employees drop unjust or unreasonable demands and companies cease unjust and oppressive treatment if unsupported by public opinion. Neither side can successfully oppose it. The United States Bureau of Labor investigated the operation of this act, and in Bulletin No. 86 of January, 1910, it is shown that from March, 1907, to March, 1909, seventeen boards were convened to pass on labor disputes involving railways. Settlements without strikes were effected in sixteen cases. In only one case was a strike begun illegally, after the report of the board was made, and in this one case, after remaining out two months, the employees returned to work on the terms recommended by the board. Their defeat was largely attributed to adverse public sentiment due to their rejection of the board's findings.—*J. Kruttschnitt, Director of Maintenance & Operation.*

WABASH.—I think the work of the board is an exceedingly important contribution to the work that has been previously done. The board has pointed out one very important, yet fundamental fact—that there is in all these labor controversies a large public interest which is not represented. This is true as to all labor controversies, but especially true in respect to public-service corporations. For example, if the flour manufacturers of the United States have a controversy with their employees, and as a result of the controversy there is an increase in wages allowed by the employer or an arbitration which results in some compromise between employer and employee, the general public is concerned. The price of flour has to be increased a certain small per cent. to make up for the increased labor cost. In

the same way, in the case of railroads and other large public-service corporations, the public does not always appreciate that in the long run it must pay not only the bare cost of service, but a fair rate of interest on the property invested. The public often evades these responsibilities and thinks that it can permanently evade them and shoulder off this expense on to the railroads; but what inevitably happens in the long run is that if the railroad does not earn a fair rate of interest on the investment, the railroad fails to secure capital for improvements which the public needs, and the public suffers. This and many other examples might be cited to prove the fact that the public is vitally interested in every wage dispute, and especially those in which public-service corporations are involved. The Arbitration Commission, to which you have referred, has rendered a real public service in pointing this out clearly and forcibly.—*Frederic A. Delano, Receiver.*

ROAD A (EASTERN).—I would prefer to have wage questions, arising between the railroads and their employees, referred to the Interstate Commerce Commission in case of threatened difficulties. It has been held by many, however, that such an arrangement would not be practicable, and if that should be found to be the case, then I would be in favor of a wage commission, as recommended by the board of arbitration.—*President.*

ROAD B (WESTERN).—While more opportunity for deliberation might change such an opinion, my present view is that the appointment of a permanent federal wage commission would be harmful. However much we deplore the fact, it is nevertheless true that appointments are not made to the Interstate Commerce Commission of men who are known to be favorable to or acquainted with the railroad viewpoint. The voice of labor is more potent politically; there is always the danger that such a commission would not be impartial; and there is the further difficulty that a commission of this nature would not have the information regarding the railways which is inseparable from a fair disposition of the wage question. It is for this latter reason that I favor the Erdman act, because the selection of the odd arbitrator is in the hands of the chairman of the Interstate Commerce Commission, or the chief justice of the Commerce Court and the commissioner of labor. This associates inevitably with the question the authority which dominates the railways' income, and for that reason, in my opinion, the Erdman act, or some amplification thereof, is the more satisfactory method.—*President.*

ROAD C (EASTERN).—I should be favorable to the enactment of a measure by Congress, or by the different state legislatures, which should embrace certain features of the Erdman act, now in effect, and of the Canadian law governing the settlement of questions of difference between employees of companies operating public utilities and their employers. I have some doubt, however, as to whether it would be feasible to make the findings of such a body on any hearing absolutely conclusive on the parties involved. I doubt whether it would be deemed wise by either the employers or the representatives of the employees.—*President.*

ROAD D (CENTRAL).—The real parties to this wage controversy were: (1) the Brotherhood of Locomotive Engineers; (2) the fifty-two railroads; (3) the public. The comparative magnitude of these three interests involved in the controversy may be briefly stated as follows: (1) the Brotherhood of Locomotive Engineers, representing 31,840 engineers; (2) the fifty-two railroads, representing 66,876 miles of main track, or over 25 per cent. of the total in the United States, handling from 42 per cent. to 47 per cent. of the traffic of the United States, and affecting (3) a population of over 38,000,000 tributary to these fifty-two railroads. While the public did not participate in the controversy, as will be apparent, the interests of the public were paramount; and when we reach a stage in this country where 31,840 locomotive engineers can combine and through strike inconvenience the business interests of not only the 38,000,000 people directly affected, but indirectly a much larger number, it would seem that the time has arrived when the government

should step in and protect public rights, at least to the extent of seeing that even-handed justice is meted out both to capital and to labor. If capital has nothing to fear through the establishment of a permanent national wage commission to arbitrate the differences between the railways and their employees in order to prevent strikes on railways, it would seem that labor ought not be apprehensive, as up to the present time labor has certainly had all the best of it because of the activity of labor in connection with political affairs. Since the government has taken such a lively interest in the regulation of railroad rates and railroad operations, which has met with the cordial support of the people generally, and since this regulation has had the effect of limiting the earning capacity of the railroads, the same incentive that prompted the people to regulate these semi-public institutions should also prompt the people to protect them from excessive wage demands of employees, enforced by the combination of organized bodies, through the threat of strike. Until such time as a permanent wage commission shall have been established, wage questions between railways and their employees must of necessity be settled as they have been settled in the past, and the public sooner or later will come to realize that this is very unsatisfactory; and, as is well known, the public has to foot the bills.—*President.*

ROAD E (EASTERN).—The plan suggested should be worked out promptly. The matter as I see it now is out of the hands of the public and the managers. National officers of some of the railroad organizations have taken a position on some questions which they state they will not leave to anyone to settle by arbitration.—*Vice-President.*

ROAD F (EASTERN).—The labor union is an organization that makes the attempt to set up a state within a state, and, as such, must in the end itself threaten the life of the state. It is, therefore, an institution the existence of which we cannot justify, and must eventually prove intolerable. We have so far succeeded in trying it as a *modus vivendi*, and have succeeded in making it work, and the proposition for a permanent national wage commission is one of the efforts to that end. It is quite possible that it might successfully for a time palliate the situation, but it will not enable it to permanently endure.—*President.*

ROAD G (MIDDLE WESTERN).—If a permanent national wage commission could be selected free from politics and composed of men who are not engaged in active business, and are as independent as the judges of the United States courts, I believe the plan desirable, but with the present basis of arbitration, such a thing as a reduction in wages is unknown, and the result would be demand after demand, and each arbitration would give an increase, large or small, depending on conditions existing, but nevertheless, an increase. This would mean a most unsatisfactory condition and one that could not long be tolerated. Such a board as I have in mind would be expected to reduce compensation when business conditions warranted it, as readily as it increased it when opposite conditions existed.—*President.*

ROAD H (SOUTHERN).—I don't believe it should be within the power of any man or organization to be in a position to tie up the railroads of this country. It is strictly human nature for a man, or a body, possessing great powers to become arbitrary and demand concessions with equity should not allow, therefore, no individual or body should be the supreme court so far as their own wants are concerned, besides which, the question of railroad wages and conditions has now reached such a point that the public should know just how they may be affected by changes.—*President.*

QUESTION 2.—HOW DO YOU REGARD THE BUSINESS PROSPECTS OF THE RAILWAYS FOR THE CALENDAR YEAR 1913?

ATCHISON, TOPEKA & SANTA FE.—I think the business prospects of the railways for the calendar year 1913 are most excellent.—*George T. Nicholson, Vice-President.*

CHICAGO, INDIANAPOLIS & LOUISVILLE.—The prospects are for a large volume of traffic on the railways in the middle West during 1913, with revenues largely consumed by expenses. In comparison with the first six months of 1912 there will probably be an increase in net also, but it will not indicate prosperity of the railways, but rather comparison with the abnormal conditions created by the severe winter of 1912.—*Fairfax Harrison, President.*

CHESAPEAKE & OHIO.—There is every indication of good business during the calendar year 1913.—*Geo. W. Stevens, President.*

CHICAGO GREAT WESTERN.—Business prospects are encouraging for 1913, provided we escape an over dose of "politics."—*W. A. Garrett, Vice-President.*

CHICAGO, ROCK ISLAND & PACIFIC.—I regard the business prospects for the calendar year 1913 as very good. Business will certainly be good unless the activities of the new Congress should be such as to frighten those engaged in industrial development.—*H. U. Mudge, President.*

ERIE.—If a good crop for the coming year is prospective, the business of the carriers will remain on the present basis; the reverse will bring a falling off the latter part of the calendar year.—*F. D. Underwood, President.*

ERIE.—Very bright.—*J. C. Stuart, Vice-President.*

ILLINOIS CENTRAL.—There never was a time in the history of this country when, as a whole, it was more prosperous. The business prospects of the railways for the calendar year 1913 depend, to a great extent, upon the new administration. If conservative and constructive with a due regard for all branches of business regardless of politics, and a comprehensive handling of the railroad question, there should be progressive prosperity not only during the coming year but for many years thereafter. Business is restricted to a great extent at present by the stagnation in railroad building. There is practically no construction under way throughout the United States. The transportation facilities for aiding business are falling behind. Individuals will not invest in new projects, nor is there any power that can compel them to do so until they are assured of a fair return upon the investment. Those who use the railroads must see to it that this question is settled and settled soon, without regard to the past or individual interests.—*W. L. Park, Vice-President.*

KANSAS CITY SOUTHERN.—Business prospects in the west for the first six months of 1913 are fairly good. There is quite a large portion of the 1912 crop yet to be moved, and lines in our section will be busy taking care of it.—*James F. Holden, Vice-President.*

MISSOURI PACIFIC.—Pending the completion of the movement of existing crops, including the general incidental business pertaining to and following this prosperous season, the prospects are good; but indefinite thereafter, in part as to what the agricultural conditions of the year 1913 will be, but more largely as to those political.—*E. J. Pearson, First Vice-President.*

NEW YORK CENTRAL LINES.—I regard as very good the business prospects of the railways for the year 1913.—*W. C. Brown, President.*

NORFOLK & WESTERN.—Good.—*L. E. Johnson, President.*

NORFOLK & WESTERN.—The business prospects for railways for the calendar year 1913 now look good, and while I believe in some instances all the business offered cannot be handled promptly, due mostly to delay to equipment, it is my belief at the same time that if the public, including the large industries, enter into the spirit of unloading and discharging cars quickly, the railways of the country will handle business with reasonable promptness. The big crops, together with revival of the steel business and strong demand for coal in most directions, ought to insure large business for the year 1913.—*N. D. Maher, Vice-President.*

NORFOLK & WESTERN.—Business prospects are at present attractive to those who have something to sell besides transportation, and the outlook is not dark from the viewpoint of the traffic man, but he, having only transportation to sell, can only profit by an increased business that carries a reasonable remuneration,

however much business he may transact under a lower basis. Should it become necessary to increase facilities in order to accommodate a large volume of trade, thus expending a large sum of money—for which in most cases borrowing would be necessary—and such increased equipment were put in a trade carrying unremunerative rates, the railway would be worse off under such conditions than by confining itself to traffic that paid a reasonable compensation for the service, and leaving the less desirable freight to competitors. The fact remains, however, that, as a rule, "the good and bad go together," hence by pursuing such a policy it would be only a question of time when the lines so conducted would not have ready use for its equipment, and would become a lessor of rolling stock to rival lines. In conclusion let me say a railway cannot expand without money, and cannot earn the necessary funds for expansion without a tariff of rates that will yield a fair profit over cost of transportation, and can less easily borrow in the money markets so long as this condition obtains.—*T. S. Davant, Vice-President.*

ST. LOUIS & SAN FRANCISCO.—I consider prospects of railway business and earnings for 1913 excellent. I think the tonnage in sight and the momentum of business will carry the railways along to the close of the present fiscal year—that is, June 30 next. Conditions thereafter will somewhat depend upon the outcome, or the prospects for the 1913 crops, but with normal crop conditions the entire calendar year 1913 ought to be good.—*B. L. Winchell, President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—I regard the business prospects of the railways the first part of the calendar year 1913 as excellent. Mr. Wilson has stated that he will call an extra session of Congress in April, 1913. This means, with a democratic house and senate, a revision of the tariff. If a radical revision is made I look for business depression to follow. If a conservative revision is carried out I see no reasons for business depression, providing always of course, there are good crops next year, which one item more than any other means greater business for the railroads.—*J. Ross Clark, Second Vice-President.*

SOUTHERN.—Prospects for business in the Southeastern states are generally favorable. "In this section, as a result of a more general adoption of improved agricultural methods, farm production is tending to increase from year to year. There is also a constant tendency toward greater diversification of crops with more attention to live stock, the dairy industry, and poultry raising. Conditions surrounding the principal industries of the Southeast, including the cotton mill industry, iron and steel, lumbering and wood-working industries, and tobacco manufacturing, are generally favorable and the outlook for the immediate future is good.—*W. W. Finley, President.*

UNION PACIFIC AND SOUTHERN PACIFIC.—Business is good at the present time; conditions are good; but it is difficult to forecast business conditions for the entire calendar year 1913. We feel hopeful.—*J. Kruttschnitt, Director of Maintenance and Operation.*

WABASH.—I think there will be a very large volume of business in the calendar year 1913, due to the immense crops raised in 1912. Large volume of business enables railroads (unless already overtaxed) to reduce unit costs of service, and, therefore, to increase profits; but there are a good many items of deferred maintenance which will call for considerable expenditures from the first available funds, both in maintenance of equipment and in maintenance of way, and I, therefore, don't think that the calendar year 1913 is going to produce very brilliant results in "net" earnings.—*Frederic A. Delano, Receiver.*

ROAD A (EASTERN).—I regard the business prospects for the year 1913, so far as can be foreseen at the present time, as promising and generally satisfactory.—*President.*

ROAD B (WESTERN).—From my viewpoint, the business prospect for the calendar year 1913 is promising, but we must not forget that a large proportion of our present prosperity is the direct result of good crops, and there is the menace of the possible action to be taken by a new congress and 48 legislatures.—*President.*

ROAD C (EASTERN).—The business prospects of the railways for the coming year are certainly most encouraging.—*President.*

ROAD D (CENTRAL).—No more promising forecast of business possibilities for a coming year has ever been within the vision of the optimist in the month of December than is present at this time; and about the only thing that could interfere with a very prosperous year in 1913 would be the attitude of congress in respect to tariff and money questions. The election of Wilson, with a majority in both houses of congress, starts the democratic party off with a clean sheet, and no party ever had a better opportunity for demonstrating the value of its principles, than the democratic party will have under the new administration.—*President.*

ROAD E (EASTERN).—Good.—*Vice-President.*

ROAD F (EASTERN).—I think we shall have a continuing increase in the volume of business offered.—*President.*

ROAD G (MIDDLE WESTERN).—I regard the business prospects for the first six months of the calendar year 1913 as being excellent; beyond that I am in doubt. It would depend largely upon crop conditions.—*President.*

ROAD H (SOUTHERN).—I regard the business outlook for the calendar year 1913 as being very good indeed unless something unforeseen develops.—*President.*

QUESTION 3.—THE PROBLEM OF INCREASING THE SAFETY OF TRANSPORTATION HAS BEEN RECEIVING A GREAT DEAL OF ATTENTION RECENTLY, NOT ONLY FROM RAILWAY OFFICERS BUT ALSO FROM THE PRESS, PUBLIC AND PUBLIC AUTHORITIES. WHAT ACTION ON THE PART OF EITHER THE RAILWAYS, OR THE PUBLIC AUTHORITIES, OR THE EMPLOYEES, OR ALL OF THEM, IS MOST NEEDED TO REDUCE RAILWAY ACCIDENTS?

CHICAGO, INDIANAPOLIS & LOUISVILLE.—Assuming that railways, manufacturers of materials used by the railways, public authorities and railway employees are, as classes, all earnestly working to reduce the causes of preventable railway accidents, there is, I believe, only one further thing which can be generally done to reach the moral responsibility, and that is to give as wide publicity to the ascertained causes of accidents as is given to the first news of failure.—*Fairfax Harrison, President.*

CHESAPEAKE & OHIO.—I believe every railway officer is giving the matter of safety in transportation earnest attention and using every means within his power to prevent accidents. Strict enforcement of reasonable rules will be a wholesome remedy.—*Geo. W. Stevens, President.*

CHICAGO GREAT WESTERN.—The railway and its employees must keep constantly before them the fact that, "eternal vigilance is the price of safety." The railway and its employees and also the public should demand that trespassing upon the railways be declared illegal under severe penalty, because there are more fatalities to trespassers on the railway, than to travelers or employees in the discharge of their duties.—*W. A. Garrett, Vice-President.*

CHICAGO, ROCK ISLAND & PACIFIC.—The action needed to reduce railway accidents is, on the part of the railways to provide all the tried safety devices that their income will permit; to keep this matter of safety before the employees continuously in such a way that they will recognize its importance to themselves as well as to the public. On the part of public authorities, less detail legislation along lines of increasing expenses, by additional men on trains and by various devices which do not increase the safety, but leaving all of these details of operation to such public commission as may be authorized to handle it, thus putting the matter in the hands of those whose business it is to investigate, instead of having it handled by such a large body as the congress or the various state legislatures. If the money which it is proposed to expend for additional brakemen, steel cars and various other things now before congress could be capitalized and expended for block signals and such other devices as really conduce to safety, it would go a long way. If, however, the railways are obliged to spend the money for additional brakemen, and for

steel cars to take the place of good wooden cars now in use, it will retard the application of real safety devices.—*H. U. Mudge, President.*

ERIE.—A very hard question. The fact that railway accidents are receiving attention is in itself a help. Railway companies have so far made the largest contribution toward safety. Whenever an accident is caused by the culpability of an employee the public authorities have so far refused to hold him responsible. As a whole, railway employees are the most painstaking and conscientious class of men engaged in any occupation. Their efficiency is, however, lessened by the general tendency of organized labor to partition the employee from the employer, which is not good.—*F. D. Underwood, President.*

ERIE.—Obedience to the rules on the part of employees; continuation of the efforts of the railroads to improve the art of transportation; the public to allow the railroads a sufficient revenue to pay for such improvements.—*J. C. Stuart, Vice-President.*

ILLINOIS CENTRAL.—The managers know full well that the rectification of grades, elimination of curves, installation of steel bridges instead of wooden structures, ballast, heavier rail, automatic signals, electric interlocking, and steel passenger equipment will eliminate, to a great extent, accidents for the railroads. There should be created a strong sentiment upholding the managers in enforcing the rules of discipline. Nothing can be expected from employees, as their tendency is in the opposite direction. The organizations equalize capability and minimize individual responsibility; they persistently demand the return to the service of employees guilty of even criminal negligence, and obtain the sympathetic support of a part of the public, some of the press, and even of public authorities. If it is a question of human life, the small number of fatalities due to railroad accidents compared with those due to trespassing should impress the federal and state commissions with the importance of taking cognizance of this phase of the "American railroad slaughter." For every railroad passenger that is killed in an accident, there are approximately 37 trespassers killed through negligence of public authorities in restricting them to safe thoroughfares.—*W. L. Park, Vice-President.*

MISSOURI PACIFIC.—Increased public sentiment, supporting those operating the railways in their constant endeavors toward better service and maintenance of discipline; together with action by the public permitting railways to earn enough to enable installation of appliances and adoption of devices, which, while in the further directions of safety, also increase costs of construction and operation.—*E. J. Pearson, First Vice-President.*

NEW YORK CENTRAL LINES.—To reduce accidents to a minimum, railroads should, as rapidly as possible, install block signals, interlocked switches and other approved safety appliances; thorough and continuous vigilance upon the part of railway officers and employees to secure strict observance of signals should be exercised; and prompt and complete investigation of all accidents should be made by proper public authorities.—*W. C. Brown, President.*

NORFOLK & WESTERN.—A strict observance of the rules of the railway companies and a full observance of the laws of the country on the part of the public and the employees, including the officers of the railway companies.—*L. E. Johnson, President.*

NORFOLK & WESTERN.—Railways are continually working on the problem of increasing the safety of transportation by increasing weight of rails, making tracks stronger, improving roadbed, improving equipment, and working harder in the inspection and checking up of standard train rules; improving the personnel of their men in many directions by providing comfortable, clean quarters for them at district terminal points; and by the adoption of safety devices and appointment of safety committees, creating the co-operation of men in the ranks with the officers and others in reducing accidents of all kinds.—*N. D. Maher, Vice-President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—I believe the safety committee movement which has been inaugurated on so many

roads and is spreading rapidly to others is one of the greatest movements toward the safe operation of trains that could be inaugurated. We are working on such a plan for our road and hope to have something definite worked out soon after the first of the year. I believe if the states would pay more attention to the trespassing nuisance a great deal could be accomplished. I believe we have reached the maximum speed with passenger trains and think the tendency from now on will be for slower schedule passenger trains, especially during the winter months. We have a 50-mile maximum speed limit on our line and we insist that it be lived up to.—*J. Ross Clark, Second Vice-President.*

SOUTHERN.—The problem of safety in all departments of railway operation is one that is receiving careful attention. The careful regulation of the speed of trains is an important movement in the direction of safeguarding the traveling public and railway employees. The prevention of accidents to trespassers on railway property is one of the most difficult problems with which the carriers have to deal and its effective solution in the public interest, as well as that of the railways, will require legislation by the states for the prevention of trespassing. By the installation of safety appliances on machines and the enforcement of proper regulations, the danger of accidents in railway shops is being reduced.—*W. W. Finley, President.*

UNION PACIFIC AND SOUTHERN PACIFIC.—To increase the safety of transportation on railways I think we should abolish the use of the word "unexplained" in connection with accidents, the cause of and individual responsibility for every one of which, whether serious or trivial, should be determined, sparing neither talent, time, nor money to do so. The results should be frankly and freely given to the public to enable it to form an intelligent opinion, the weight of which will be irresistible in bringing about the necessary corrections, which should be left to the railroads themselves unhampered by hasty and ill-considered legislation too often inspired or influenced by promoters of patented devices. If the policy of investigating accidents FAIRLY and THOROUGHLY and allocating individual responsibility therefor, making the results public, is established, the public authorities will have performed a great service to their constituents. The Dakota Railway Commission which studied these questions in the early part of this calendar year, reached conclusions strongly endorsing the policy of giving publicity to the identity of the individual responsible for an accident, and even of more interest is a pamphlet published by the Minnesota Railroad and Warehouse Commission, through D. F. Jurgensen, its engineer, on "Railroad Accidents, Their Causes and Remedy," a temperate and fairly written article, from which I quote the following: "In this regard, there is a marked contrast in sensibility to duty and appreciation of responsibility to society between the railway employees of this country and those of European railways. Whenever the European railway employee fails in performing his prescribed duty in train operation, and his failure of duty results in death or injury to persons, he is held accountable to the state, and it is an interesting fact that there are even less fatalities in connection with the operation of railways in Germany than with that of the agricultural pursuits of that country." Enlisting the co-operation of employees in promoting safety is of the greatest importance. Wherever it has been sought there has been loyal and hearty response. Under the above policies Union Pacific and Southern Pacific accidents in 1911-12, per million locomotive miles run, were only 20 per cent. on the former and 25 per cent. on the latter of what they were in the year 1903-04.—*J. Kruttschnitt, Director of Maintenance and Operation.*

WABASH.—All safety appliances involve the expenditure of large sums of money. Among those safety appliances which are generally appreciated as being highly desirable are: Double track, block-signalling, heavier rail, slower maximum speeds for passenger trains, all-steel and steel underframe passenger equipment. I consider the steel underframe car fully equal in structural strength to the all-steel car, more satisfactory from the standpoint of comfort to the passenger, and equally safe in all respects except liability of fire. The liability of fire is something

that can be almost wholly overcome if the use of compressed gas tanks on cars is done away with. Railroad officers are moving all the time towards the securing of these benefits. Every railroad official not only desires them, but feels keenly the importance of having them provided. With the exception of the one item that I have mentioned above—reduction in train speeds—they involve large expenditures, and it becomes a question of the railroad company's credit. The consideration of this question involves a sort of "vicious cycle," or, in more homely language, a kind of "dog-chasing-his-tail" problem, for, obviously, *railroad companies cannot have credit unless they have better earnings; they cannot have better earnings unless they have more facilities; and they cannot have more facilities unless they have credit.* Railway men feel that the public, through the Interstate Commerce Commission and their state and federal Legislatures, can furnish the only solution to this difficult problem, to wit, less exactions and the right to raise those rates which are too low.—*Frederic A. Delano, Receiver.*

WABASH.—The best talent and resources of the railroads and manufacturers is engaged on the problem of increasing the safety of transportation, and a marked improvement has been made in equipment and permanency of the roadbed and structures. Much good has also been accomplished by the safety organizations of officers and employees, but there is still something lacking. *It would increase the safety of transportation if the Interstate Commerce Commission would prescribe the rules and regulations for the movement and safeguarding of trains, used as a standard by the railroads generally.*—*Henry Miller, General Manager for Receivers.*

ROAD A (EASTERN).—I think the greatest and most important improvement in this direction could be brought about through a higher standard of discipline upon the part of all railroad employees. A careful reading of the reports of the various accidents that happen will show, I believe, that the great majority of the serious accidents could have been prevented if the employees directly responsible had properly obeyed the rules. If employees in charge of train service become indifferent to the working rules, no system of operation would then be safe. Of course, much more remains to be done, but that subject is too great to discuss briefly.—*President.*

ROAD B (WESTERN).—Automatic or interlocked signaling, combined with a more rigid insistence upon strict discipline and obedience to rules, is the most essential factor necessary in the promotion of safety in transportation.—*President.*

ROAD C (EASTERN).—It is most difficult to specify any particular action on the part of railways, public authorities or employees as being most needed to reduce the number of railway accidents. The railways are undoubtedly spending large sums of money each year in various directions to promote the safety of their operation. In view of the additional laws being passed increasing the liability of the railways to their employees and their families for death and personal injuries suffered by them as result of accidents, the management of the railways have greater incentive than ever before to do whatever is reasonably possible to avoid them. The public authorities, through their inspectors and examiners, make careful and exhaustive investigations of the causes of all accidents resulting in death or personal injury, but the reports and recommendations made as a result of these investigations do not seem to have assisted the railways either in eliminating altogether or reducing accidents materially, nor have they proven of great aid or value to the railways in adopting measures or policies to reduce their number. The records show that a large number of the accidents and resulting casualties on railways are due to carelessness or heedlessness of employees. Most of the principal railways of the country have organized safety bureaus among their employees with a view of interesting them in the matter of stopping the careless or reckless methods more or less prevalent throughout the rank and file of railway employees. The railways are meeting with much success in this movement, and if carried on energetically and persistently it will be the most

helpful action that can be taken by the railways and their employees.—*President.*

ROAD D (CENTRAL).—On this road we have recently organized a "safety first" bureau, and I know from my own experience on a former road, the splendid results that can be attained under this plan. The "safety first" organization makes sentinels out of the many employees in the service who are serving on committees, who not only report anything and everything of a dangerous character, but also warn the other employees against dangerous practices. The "safety first" movement is spreading all over the country, and there is no doubt that it will do more than any other one thing to reduce railway accidents. The statistics of the Interstate Commerce Commission for the fiscal year ended June 30, 1911, show total casualties amounted to 10,396 persons killed. Of this number, 5,284 (equal to 50.83 per cent.) were trespassers, and 356 (equal to 3.42 per cent.) were passengers. The "safety first" movement will materially assist the railroads in reducing the casualties of passengers and employees, but the next most important step in the direction of reducing railroad casualties would be effective national or state legislation that would prevent trespassing upon railroad property.—*President.*

ROAD E (EASTERN).—Railway officers will have to improve the machine, but the public and the public's commissions will more than discount these efforts unless the existing practice of thoughtlessly condemning the machine and condoning the man is stopped.—*Vice-President.*

ROAD F (EASTERN).—A recognition on the part of the public and of the labor organizations of their responsibilities to maintain order and discipline. The public ought to keep the trespassers off the railway property, and both they and the labor organizations should be active in assisting and upholding the state of discipline. Any relief to be afforded by safety appliances is negligible compared with what could be effected in these two ways.—*President.*

ROAD G (MIDDLE WEST).—The railroads have done all they can, with the limited credit at their command, in the way of increasing the safety of transportation. The lines that have surplus earnings have introduced the most modern systems of block signaling, with complete interlocking at all important points. They have protected their lines in every possible way against accidents, but the employees have not done their part. Discipline is not what it should be and the interest of the employees in the affairs of the company is not up to the standard of ten years ago. I attribute this largely to the fact that many of the men feel they owe their first allegiance to the labor organizations and depend on them for protection instead of on the company that employs them. Take as an illustration the very serious accidents to passenger trains resulting from rear end collisions. Some occur on lines with block signal protection and some without, but all are due primarily to the failure of the flagman to protect the rear end of his train. The flagmen are paid liberal wages with no other duty to perform, and are expected to go back immediately upon the stopping of a train and protect it in accordance with the rules in existence throughout the country, yet they do not do it and there is no law sufficient to compel the observance of the rules and regulations of railroads in this regard. Carelessness, likewise, on the part of conductors and engineers from failure to observe orders and various rules have caused many collisions. There seems to be no way to enforce proper discipline. Men are dismissed from the service and immediately secure employment on other lines. They seem to care little for the penalties, and the remedy lies in the most stringent laws providing for imprisonment in case of failure to obey the ordinary and proper rules and regulations of the railroads issued for the purpose of protecting the lives of passengers.—*President.*

ROAD H (SOUTHERN).—I believe the question of safety in transportation is a matter which is working itself to a conclusion. That continuance of progress made within the last

ten years will in the next decade, insure a large increase in the freedom from accidents.—*President.*

QUESTION 4.—IS THERE A REAL SHORTAGE OF RAILWAY FACILITIES, AND IF SO, WHAT MEASURES ARE, IN YOUR OPINION, MOST NEEDED IN ORDER TO REMEDY THE SITUATION?

CHICAGO, INDIANAPOLIS & LOUISVILLE.—There is a real shortage of railway facilities, but not as great, perhaps, as it appears to be. It is more in the most expensive of all railroad improvements, namely, terminal facilities, than in cars, though the provisions of new cars has been unequal by individual roads. The situation can perhaps be palliated by increased efficiency in loading and unloading by shippers and in movement by the roads, but can be remedied only by the establishment of an enduring confidence on the part of those who make appropriations for added facilities that there will be a fair return on the necessary investment. Such confidence does not now exist in all quarters.—*Fairfax Harrison, President.*

CHESAPEAKE & OHIO.—The principal difficulty in respect to railway facilities is inadequate terminals. I believe there is sufficient equipment if it is handled with promptness, and this is impracticable until terminal facilities are considerably enlarged.—*Geo. W. Stevens, President.*

CHICAGO GREAT WESTERN.—There is a real shortage of railway facilities, especially at terminals and at many industrial plants, which retards the prompt and even the proper handling of freight equipment during the busy season. *There must be an increase in rates* to secure greater spread between railway income and outgo to make railway investments as attractive as any other investment, because the federal, state and municipal requirements, the demands of the employees, and the exactions of the public are constantly increasing the cost of operation, thereby reducing the spread between income and outgo.—*W. A. Garrett, Vice-President.*

CHICAGO, ROCK ISLAND & PACIFIC.—There is a real shortage of railway facilities to properly handle the increased traffic, although not so much as is generally supposed. If the traffic could be handled uniformly throughout the year, the facilities would be ample. There is not sufficient to take care of the "peak" load to the satisfaction of the shippers. What is most needed is some method of establishing confidence of investors in the stability of railway securities. In other words, in the ability of the railways to earn a sufficient amount to pay returns on the added capital needed.—*H. U. Mudge, President.*

ERIE.—The shortage of railway facilities is more fancied than real. Some think that railway facilities should be provided by which to move a flood time business, but no plan has yet developed for utilizing such created facilities in the time of business recession. Generally, the consumer does not use sufficient foresight in ordering, thereby creating a congestion. It is similar to the problem in a city like New York. Every employer wants to start his factory at 7 o'clock in the morning, resulting in congested transportation facilities for employees. Every employee wants a seat, and it is quite impossible (and always will be) if every factory is to start and close at the same hour, to see that he is provided with it.—*F. D. Underwood, President.*

ILLINOIS CENTRAL.—There does not exist a real shortage of railway facilities to handle the present volume of business if that business could be so regulated as to move to the best advantage of the country at large. There is an economic loss in moving coarse commodities, such as lumber, cement, coal, etc., during the time that perishable fruits, cotton, corn and the cereals must move. If we are to maintain our commercial supremacy and continue to develop our resources it will be necessary to add greatly to the present railway facilities. Population is increasing at the rate of one and a half million per annum; the ratio of birth is now about one-half, which, however, is an increasing ratio, so that in the next ten years the facilities will be entirely inadequate, and it will be impossible to catch up—in this way seriously restricting our material prosperity and progress.—*W. L. Park, Vice-President.*

KANSAS CITY SOUTHERN.—Unquestionably there is a shortage of railroad facilities, particularly equipment and terminal tracks at all large centers. The trend of public opinion for the last decade has been toward the responsibility that owners and officers of railway companies owe to the public, and it is doubtful if much improvement can be made in railroad facilities until the pendulum turns and the public begin to realize that it has some responsibility to the owners and managers of railway properties as well, if the country is to advance in commerce, wealth and prosperity.—*James F. Holden, Vice-President.*

MISSOURI PACIFIC.—The present development of railway facilities is not abreast of the requirements incidental to the growth of traffic, more particularly the terminals. Action is needed by the public, on behalf of a present and future railway policy which will support the credit of the railways, in obtaining the capital required.—*E. J. Pearson, First Vice-President.*

NEW YORK CENTRAL LINES.—I do not think there is any very pronounced shortage of railway facilities. A very large amount of money has been expended since the great congestion of 1907 in additional equipment, enlarged terminals, increased main trackage, etc. This expenditure must be continued to keep pace with the growth of business, in order to prevent a future shortage of transportation facilities.—*W. C. Brown, President.*

NORFOLK & WESTERN.—Yes. There is a real shortage of railway facilities. In my opinion the thing most needed in order to remedy the situation is to allow the railway companies to advance their rates.—*L. E. Johnson, President.*

NORFOLK & WESTERN.—I think public authorities ought to stop any further legislation until the railways work out what has already been passed, for there is a real shortage of railway facilities in many cases. Large extensions of terminal and division yards should be made, but with practically no chance to increase rates it is difficult to provide such facilities.—*N. D. Maher, Vice-President.*

ST. LOUIS & SAN FRANCISCO.—I am sure that there is some real shortage of railway facilities at present on a majority of the lines. The deficiency will be more marked, and will show more plainly year by year in future unless the railways find it possible to make provisions. The shortage is in the way of city terminals, division terminals, passing tracks, and to some extent, in additional second, third and fourth main tracks. To some extent, undoubtedly additional equipment should be provided, although the equipment situation can be partly cured by additions to the railway plants which will permit car movement without serious or frequent interruption.—*B. L. Winchell, President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—I believe there is a real shortage of railway facilities, both equipment, locomotives, terminals, etc., during only about two of the fall months every year. During the other ten months of the year I believe the railway facilities are ample to take care of the business offered. I do not believe the railroads could be expected to spend millions to provide for the prompt movement of the great congestion of business which they are called upon to move in the fall, and have this investment practically idle during the balance of the year.—*J. Ross Clark, Second Vice-President.*

SOUTHERN.—Railway facilities in the Southeastern states are, on the whole, adequate for handling promptly a normal volume of traffic. Future increases in traffic and any shortage of facilities that may occur will, I have no doubt, be handled by the taking care of "pinch" points and by supplying any deficiency of equipment.—*W. W. Finley, President.*

UNION PACIFIC AND SOUTHERN PACIFIC.—I think the railroads of the United States are short in their percentage of second main tracks and, to some extent, perhaps, of terminals in large cities. What can be done to relieve the situation cannot be stated briefly or in a general way, but railroad managers by close study are earnestly striving to bring about improvement. Carload lots at small stations are generally unloaded by consignees into their warehouses or storage yards, which are often

inadequate, and equipment is consequently delayed. It is evident to any one whose attention is directed to the matter that as hundreds of thousands of cars are handled in private industry tracks, if the public—the consignees—would increase their facilities concurrently with the railroads, it would help very much, for if a little delay only were saved at each one of a large number of stations the aggregate would run up to very high figures. Promptly released and properly handled, the present equipment of the railroads is sufficient to transport the traffic of the country, but railroad managers have now very little control over the use of their equipment by the public. Reducing free time and penalizing delays by gradually but rapidly increasing demurrage charges would expedite release, and enlarged terminals and more second track would expedite movement of equipment. An all-around increase of 10 per cent. in the efficiency of the use of equipment would accomplish the same result as adding 225,000 freight cars to the equipment of our roads.—*J. Kruttschnitt, Director of Maintenance and Operation.*

WABASH.—The population of the country is growing at the rate of somewhere between 3 and 5 per cent. per year—more rapidly in some communities than in others. This calls for a constant and steady increase in facilities. In my estimation, it rarely happens, if ever, that there exists a general shortage of railroad facilities; and yet, there is never a time when there is not demand, and it might be said a general demand, for additional railroad facilities. A great economist once said that there could be "no general over-production until every human want was satisfied," and yet we all of us know that there has been at times great and almost general over-production of certain commodities. So in the way of transportation facilities. In the earlier days of railroading, when a great deal of money was made in the projecting and building of new railroads, railroad facilities went ahead of the demand. Then there came a violent reaction and in the last 25 years the railroads of the country have had to face all sorts of repressive measures and exacting legislation. Railroad extensions into new country are the exception today, even though the country may be unoccupied. By the same token, the building of roads parallel to existing roads, to blackmail and sell to existing lines, has ceased. Most of the building that has gone on in the last 10 or 15 years has been in adding to or developing or connecting up existing Systems and has been done on the credit of old and well-established companies. Railroads should not be blamed for occasional or spasmodic shortages of equipment or other facilities. It is not uncommon for railroad companies to do in four months of the year a volume of business equal to that of the other eight months; and yet, even with this disparity, complaint is made that the railroads are not able in those four months to handle an even larger volume of business. Thus, an immense section of the country has to be supplied annually with fuel coal. Great efforts have been made by the railroads to get the communities living in these areas to take their supplies in the summer or early fall months, but in spite of all such efforts, every year we see the spectacle of terrific demand for fuel in the late fall and winter—a demand which it is almost impossible to supply and which, synchronizing as it does with the heavy fall movement of crops, taxes the railroads to the utmost and sometimes beyond the limit of their capacity. For four years the railroads have shown enormous surpluses of cars. Orders for cars have diminished and in some years there have actually been more cars destroyed than have been built new. After a succession of such years and a period of general depression, the year 1912, with its abundant crops, taxes railroad facilities to the very limit.—*Frederic A. Delano, Receiver.*

ROAD A (EASTERN).—I think the results of the last three or four months have shown that there is a definite lack of railway facilities in certain quarters, and I believe the lack will be more marked during the winter months. In my opinion, the thing most needed to help the situation is more available net revenue on the part of the railroads, to apply either to additions and betterments, or to fixed charges on new capital raised for that purpose.—*President.*

ROAD B (WESTERN).—In the most general sense, there is a shortage in the country as a whole in railway terminals and in freight car equipment. I think under all circumstances the railroads are doing remarkably well in the purchase of new equipment, and that if co-operation is given to the railways by federal and state authorities, penalizing the unnecessary delay of equipment in the hands of shippers this, of the two, represents the most encouraging prospect. In the case of freight cars, the financing is frequently done by car builders. In the case of terminals, however, representing vast expenditures for expensive inside property, there will be no material improvement until the public attitude toward railway securities undergoes a change and this will not be until the vendors of money have seen a substantial modification in the present attitude of federal and state commissions toward railway income.—*President.*

ROAD C (EASTERN).—There does not appear to have been any great shortage of railway facilities for handling the large traffic of the country which the railways have been called upon to transport since July 1, last. There has been some congestion at some of the terminal points, but it does not seem to have been very severe nor to have continued for any length of time and has been due, no doubt, to local and temporary conditions rather than to any general lack of railway facilities, whether of equipment or otherwise.—*President.*

ROAD D (CENTRAL).—There is a real shortage of railway terminal facilities, and of power and car equipment on many roads; and when the people fully realize that the increased state and national burdens that have been placed upon the railroads in the past few years are really carried by themselves, and that every additional burden means just so much less net money that can be earned on capital invested (which naturally makes the securities of railroads less attractive and renders the railroads less able to secure money for improvements), the remedy for the situation that will become apparent to everybody will be less restrictive legislation and more favorable conditions of operation under government laws, the same as is practiced in other countries, with a view of giving the railroads full opportunity for the highest possible development of the great arteries of commerce of the United States. This would do more for the development of the country than any other one thing, as the growth of big crops, the development of manufacturing industries, mining industries, etc., etc., are all seriously hampered when the capacity of the railroads to handle traffic is restricted.—*President.*

ROAD E (EASTERN).—Yes, and a big one. The following is from page 295, Interstate Commerce Hearing, Minneapolis, December 19, 1906: "Mr. Hill. I have the suggestion, but people may differ. There is no subject that is of such cardinal importance as the one you are dealing with today. Every day, from now on until it is solved, its importance will become greater and greater. The commerce of this country and its growth and its business is against a stone wall so high they cannot see the top of it. No man can see the top of it today. I have looked everywhere; turned everywhere to see what can be done." As to the remedy. Give the railroads a chance to earn a liberal surplus which can be put back into the property for non-productive betterments. These do not earn money, but in some cases, as a new station actually increases operating expenses without making additional business, but the facilities should go into a modern transportation machine.—*Vice-President.*

ROAD F (EASTERN).—Speaking broadly, I have the feeling that the present railway facilities are capable of handling an increase of from 15 per cent. to 20 per cent. over the business handled in 1912.—*President.*

ROAD G (MIDDLE WEST).—There is a real shortage of railway facilities; not only in terminals but in equipment. This shortage would not have occurred to so serious an extent but for the lack of credit on the part of most of the railroads. The failure of the Interstate Commerce Commission to grant the increase in rates two years ago, the enormous increase in compensation to employees and in the cost of material and supplies has brought the net earnings of the railroad down to a point where there is not sufficient margin to warrant the investing public in purchas-

ing their securities and thereby place them in a position to acquire additional equipment and to provide additional facilities. It is what was predicted two years ago; the results were expected and the decrease in net earnings has taken place. The failure of the investing public to buy railroad securities is well known and the conditions cannot be corrected, as far as the majority of the roads are concerned, without a substantial increase in net returns. To accomplish this result there must be a halt in adverse railway legislation; there must be some relief from state and national commissions looking to an advance in freight and passenger fares and a relief from regulations involving large expenditures of money. There must be a disposition on the part of taxing bodies to reach a more equitable basis of levying taxes and to relieve the roads from the heavy burden they are now carrying. The improvement in earnings this fall resulting from the enormous crop throughout the country should not deceive people as to the real condition of the railroads. It will be fortunate if the increased earnings of this fall and winter will restore to the railroads the losses of last winter and spring, which are still fresh in the minds of railroad officers.—*President*.

ROAD H (SOUTHERN).—The greatest problem in railroad facilities is keeping them balanced, that is, you should have a proper number of main tracks to serve your terminals and vice versa; you should have enough facilities to repair your cars and engines, etc., as, if you get an excess of one character of facility, as compared with another, congestion will result and nullify your expenditure.—*President*.

TRANSPORTATION AND ACCOUNTING OFFICERS.

The Winter Meeting of the Association of Transportation and Car Accounting Officers was held at New Orleans, December 10 and 11, with 88 members in attendance, and President J. M. Daly in the chair.

The proposed change in Rule 18, code of per diem rules, presented by the committee on car service, which prescribes the form to be used by a switching road for notifying holding road of consignee's inability to accept cars, was adopted for submission to The American Railway Association; the meeting making a slight change in the form presented by the committee. The opinion of the committee, that a central office for the placing of embargo notices is impracticable, was concurred in by the association.

The proposed revision of Rule 6, Code of Car Service Rules, was adopted for submission to The American Railway Association, as follows (new matter in Sections 1 and 2 in italics):

PROPOSED.

Member Road—A road that is a member of the Per Diem Rules Agreement.

Non-Member Road—A road that is eligible but is not a member of the Per Diem Rules Agreement as provided for in Article 4 and Resolution dated October 26, 1904, amended November 16, 1910, of The American Railway Association.

Non-Per Diem Road—A road that is not eligible to membership as provided for in Article 4 and Resolution dated October 26, 1904, amended November 16, 1910, of The American Railway Association.

PER DIEM RULE 6.

PROPOSED FORM.

Section 1. In case a *Member Road* delivers an empty car of a *Member Road* without the consent of the owner to a *Non-Member Road*, or if a *Member Road* permits the loading or reconsigning of a foreign car without the consent of the owner to such a road, it shall be responsible to the owner for the payment of an amount equal to the Per Diem accruing on the car while on such road.

Section 2. In case a *Member Road* delivers a car of a *Member Road* without the consent of the owner to a *Non-Per Diem Road*, it shall be responsible to the owner for the payment of an amount equal to the per diem accruing on the car while on such road.

The recommendation of the Committee on Car Service that Rule 8 of the per diem rules (which provides for the waiver of per diem on cars held awaiting receipt of repair material from owner), be eliminated, was not concurred in by the Association, and the previous action of the Association recommend-

ing the elimination of Rule 8 was rescinded. The action of the committee respecting definitions in connection with the application of per diem 19 was approved.

The committee on office methods and accounting reported that 282 private car owners have adopted the reporting marks assigned by the committee. The Association concurred in the opinion of the committee that suggested changes in the per diem rules, to compel the reimbursement of erring road for per diem allowed by it in error, are unnecessary; and that an adherence to the previous legislation of the Association, which provides a form for the purpose of calling attention to apparent overallowances in per diem reports received, will accomplish the desired result.

The association also concurred in the findings of the committee, that it could not consistently recommend a change in Rule 11, to provide that the privilege of continuance of a per diem claim shall cease when the claimant fails to trace for claim within six months from date of his last communication. The recommendation of the Committee that the last sentence of the second paragraph of per diem Rule 9, be changed to restore the requirement that an interchange report be sent to the car record office for each calendar day, regardless of the fact as to whether cars are or are not interchanged, was adopted for submission to The American Railway Association, as follows:

Proposed Form.—Rule 9: *Reports must be made for each calendar day*, the sheets to be numbered consecutively, beginning with the first of each month.

The Association concurred in the refusal of the Committee to recommend a change in the method of handling claims under resolution No. 0. M. 30, to provide for the return of "no record" claims to the claiming road for verification before the road originally receiving claim, proceeds with its work of investigation.

The Association adopted a resolution regarding the preparation and transmission of junction cards currently for submission to The American Railway Association, as follows:

Resolved, That in view of the importance of the prompt receipt of the information contained on the junction card, not only for accounting purposes, but to enable the car owner to intelligently operate under Rule 19, and Rules 1 to 4 of car service rules, and in the preparation of information for A. R. A. Form C. E. 5, it is important that this matter be brought to the attention of all members of The American Railway Association; and be it further

Resolved, That we respectfully request the proper Committee of that Association to issue a circular bearing on this subject, the same to be followed by an interpretation defining what is required under the spirit of Rule 10, Code of Per Diem Rules, in order to insure not only the preparation but the transmission of junction cards daily.

The committees on Handling Railroad Business Mail on Conducting Freight Transportation reported progress. At the request of the Committee on Conducting Passenger Transportation, its report was withdrawn for further consideration.

The committee on joint interchange and inspection bureaus presented a report covering the joint action taken by it and the committee from the Master Car Builders' Association in connection with the recent changes in the M. C. B. rules of interchange.

It was decided to hold the next meeting at Charlevoix, Michigan, June 24 and 25, 1913.

NEW LINE FOR SWITZERLAND.—The railroad having the most tunnels and bridges in Switzerland is the one now to be constructed along the shore of the Lake of Brienz from Interlaken to the city of Brienz. It was originally intended to make this road the normal wide gage to connect with the state railways from the north, but this plan has been abandoned, and it has been definitely decided to use the 3 ft. 1 in. gage in order to connect with the Brunig line, so that a through service between Lucerne and Interlaken will be possible. The road will be about 10 miles long, and the difficulties of construction are evidenced by the fact that 13.5 per cent. of the line will be in tunnels and 6 per cent. on bridges. The total cost will be about \$1,351,000.

THE TREND OF RAILWAY EARNINGS.

Although the Record in the Past Year is Not Good, There Has Been a Change for the Better, Especially in Gross.

BY FRANK HAIGH DIXON,

Professor of Economics, Dartmouth College; Chief Statistician, Bureau of Railway Economics.

The statistician who deals with continuing data is constantly torn in his mind between the desire to preserve his material in form for exact comparison over a series of years and the ambition to improve the character of his material and its method of presentation. If he yields to the latter impulse, which should always be the predominant one, he must suffer the wrath of those who would employ his results to show tendencies over a longer or shorter period. Just at present the statistician of the Interstate Commerce Commission is defying all the advocates of uniformity and comparability by making a number of fundamental changes in the figures included in his reports and in their method of presentation. Fortunately, for the purposes of this article, the changes are not significant, and with a brief explanation of their character we can proceed to discuss our tabulations.

The statistics for 1910 as drawn from the monthly bulletins of the commission include all so called "large roads," that is, those operating a mileage in excess of 250 miles or having annual

the commission, and the fact that the figures are given only on a per mile basis makes it possible to introduce the data without disturbing the uniformity of the table.

Table I, taken from the commission's compilations, shows the revenues and expenses in the aggregate and per mile of line for railways having operating revenues of \$1,000,000 or over for the fiscal years, 1910, 1911 and 1912. It appears that the year 1910 still remains the banner year in our history in the height of operating revenues per mile. The year 1912 recovered a considerable portion of the loss suffered in 1911, but still showed a decrease of \$91 per mile, or 0.7 per cent. as compared with 1910. Operating expenses enjoyed no such experience. They have steadily increased in spite of the variation in earnings, the total increase for the two years amounting to \$319 per mile, or 3.8 per cent. The effect of this steady increase in the cost of operation is revealed in the figure of net operating revenue, which shows a constant decline during the two years amounting for the period to \$410 per mile, or a decrease of 9.5 per cent.

TABLE I.—REVENUES AND EXPENSES IN THE AGGREGATE AND PER MILE OF LINE OF STEAM ROADS HAVING ANNUAL OPERATING REVENUES OF \$1,000,000 OR OVER; FISCAL YEARS 1912, 1911 AND 1910.

Account.	Fiscal year ending June 30						Increase or decrease per mile of line 1912 over			
	1912.		1911.		1910.		1911.		1910.	
	Amount	Per mile of line.	Amount.	Per mile of line.	Amount.	Per mile of line.	Amount.	Per Cent.	Amount.	Per Cent.
Miles of line operated (average).....	219,137		216,330		210,696					
Total operating revenues.....	\$2,761,721,094	\$12,603	\$2,708,791,199	\$12,580	\$2,674,617,284	\$12,694	\$23	..2	d \$91	d .7
Total operating expenses.....	1,908,176,452	8,708	1,857,102,048	8,625	1,767,555,491	8,389	83	1.0	319	3.8
Net operating revenue.....	853,544,642	3,895	851,689,151	3,955	907,061,793	4,305	d 60	d 1.5	d 410	d 9.5
Net revenue—Outside operations.....	488,539	2	1,250,094	6	1,709,553	8				
Taxes.....	116,793,953	533	104,446,682	485	100,254,109	476	48	9.9	57	12.0
Operating income.....	737,239,228	3,364	748,492,563	3,476	808,517,237	3,837	d 112	d 3.2	d 473	d 12.3

d Decrease.

operating revenues of more than \$1,000,000. Since January, 1912, the commission has included in its bulletins only those roads having annual operating revenues of \$1,000,000 or over. In view of the fact that 1911 figures are given on a comparable basis in the 1912 bulletins, it is possible to fill out the corresponding months of 1911 on the same basis as the figures of 1912. The average operated mileage reported in 1910 was slightly greater than in 1911 and 1912, but the comparison is scarcely disturbed, as the figures are not shown in the aggregate in this article, but only on a per mile basis. For the months of July to October, 1911 and 1912, bulletins of the Bureau of Railway Economics have been used, as the commission's figures for these months were not available when the tables were prepared. The mileage covered is nearly identical with that of

In other words, the slight recovery in gross earnings during the last fiscal year has been absorbed into expenses and has not favorably influenced net earnings. Taxes have continued their steady upward trend, reaching \$533 per mile in 1912, an increase over 1910 of \$57, or 12 per cent. The result is that operating income which is net operating revenue less taxes (with adjustments for outside operations) shows a decline for the two years of \$473 per mile, or 12.3 per cent.

This table brings our information down only to June 30, 1912. It will be necessary to refer for later statistics to Table II. Here the revenue items are given per mile of line for each month of the years 1910 and 1911 and for the ten months available of 1912, together with the per cent. of increase or decrease for each month of 1912 when compared with the corresponding

TABLE II.—MONTHLY REVENUES AND EXPENSES PER MILE OF LINE, 1910, 1911 AND 1912.

(Figures for 1910, for January to June and November-December, 1911, are from Interstate Commerce Commission bulletins; those for July to October, 1911, and the figures for 1912 are from the monthly bulletins of the Bureau of Railway Economics.)

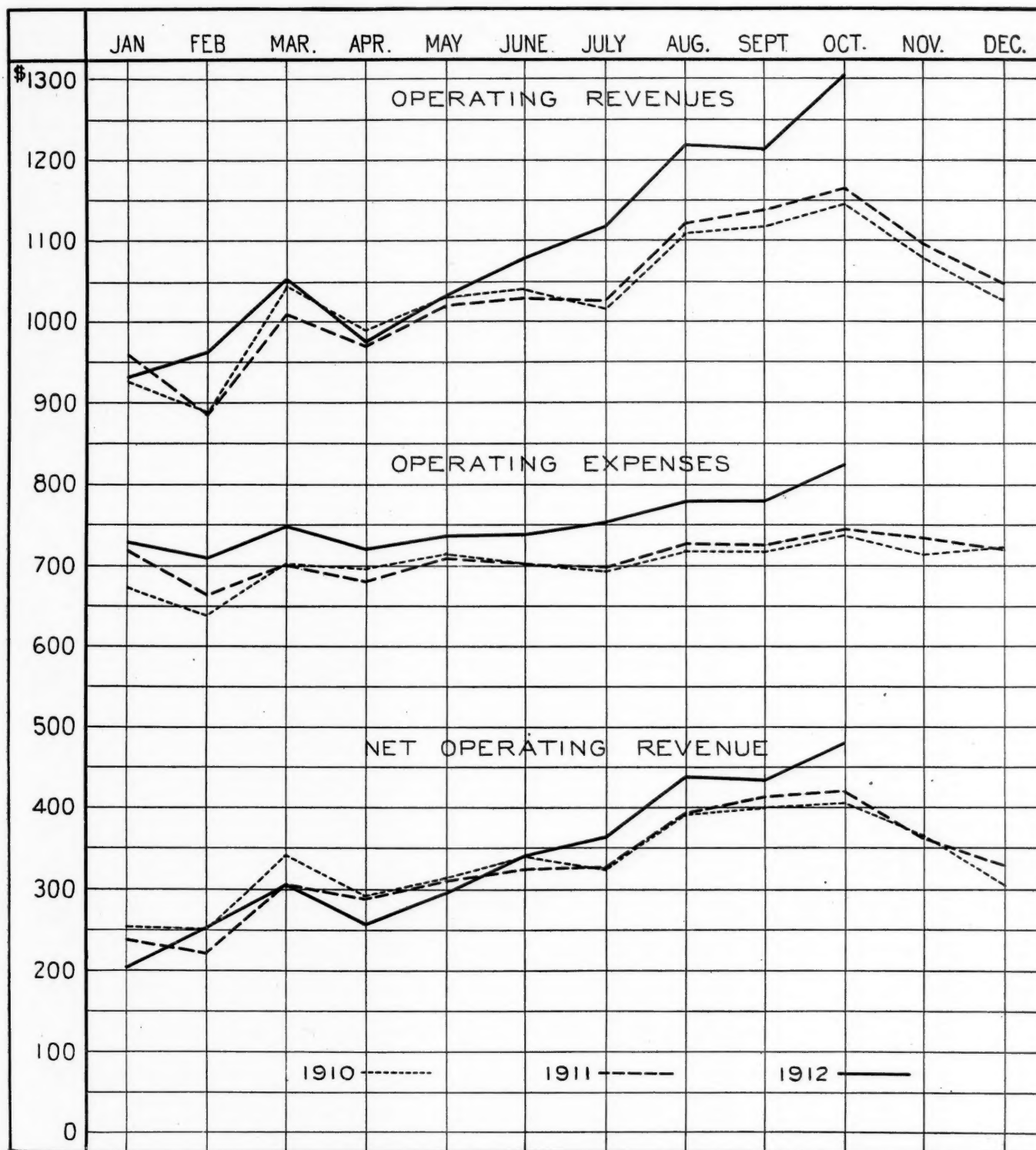
Month.	Operating Revenues per Mile.				Operating Expenses per Mile.				Net Operating Revenue per Mile.			
	1910.		1911.		1910.		1911.		1910.		1911.	
	Amount.	Per cent. increase or decrease from 1911.	Amount.	Per cent. increase or decrease from 1911.	Amount.	Per cent. increase or decrease from 1911.	Amount.	Per cent. increase or decrease from 1911.	Amount.	Per cent. increase or decrease from 1911.	Amount.	Per cent. increase or decrease from 1911.
January.....	\$926		\$959		\$673		\$720		\$253		\$239	
February.....	890		886		639		664		251		221	
March.....	1,046		1,010		703		703		343		307	
April.....	991		970		697		681		294		288	
May.....	1,031		1,020		716		709		315		311	
June.....	1,042		1,028		703		704		339		324	
July.....	1,016		1,027		693		699		323		328	
August.....	1,110		1,122		719		728		391		394	
September.....	1,117		1,139		718		727		400		412	
October.....	1,146		1,166		739		745		407		421	
November.....	1,079		1,097		714		734		365		362	
December.....	1,028		1,050		723		720		304		329	

month of 1911. The figures for October 1911 and 1912 in this and succeeding tables and in the chart exclude the returns of four railways which had not been filed with the commission when this article went to press. The omissions involve 1,203 miles of line in eastern territory, and 1,073 miles in western territory.

The figures of the percentage columns give evidence of im-

July to October are based on figures for 1911 which are themselves increases over the figures for 1910. From January to May, excepting February, operating expenses per mile for 1912 as compared with 1911, increased more rapidly than gross earnings, resulting in decreases in net operating revenue per mile.

These decreases ran as high as 15 per cent. in January. However, since May, while there have been increases in expenses



Comparative Monthly Earnings and Expenses Per Mile of Road.

proving conditions in the railway industry. Beginning with February of this year there has been for each month an increase over 1911 in the operating revenues per mile, the increase being less than 1 per cent. in April and May, but over 8 per cent. in February, July and August, and reaching nearly 12 per cent. in October. It is significant that the increases for the months of

they have been more than offset by increases in gross revenue. Net operating revenue shows the results in the figures for the period from June to October, in which the range of increase over 1911 is from 4.4 per cent. in June to 14.1 per cent. in October.

While a possible fallacy lurks in the use of the operating

ratio, and while it is a mistake to lay too much stress upon it, particularly when net revenue is under consideration, yet it is of some interest to present (Table III) the ratio of operating expenses to gross earnings for the separate months of the three years under consideration. One interesting observation to be drawn from this tabulation is that the curve of variation between different months is substantially uniform for the three

TABLE III.—OPERATING RATIO BY MONTHS, 1910, 1911 AND 1912.

Month.	Operating Ratio.		
	1910	1911.	1912.
January	72.69	75.09	78.22
February	71.84	75.02	73.74
March	67.21	69.58	71.01
April	70.36	70.26	73.66
May	69.42	69.48	71.36
June	67.45	68.46	68.44
July	68.21	68.09	67.42
August	64.79	64.91	64.08
September	64.23	63.83	64.30
October	64.51	63.90	63.20
November	66.15	66.98	.....
December	70.41	68.64	.....

years under survey. The months of August to October show the lowest operating ratio. Then an advance begins which reaches its culmination in January. This is followed by a decline that is fairly constant except for a considerable increase in the month of April. The calendar year 1912 shows the widest range of variation for the three years, the highest point being 78.22 per cent. in January and the lowest 63.20 per cent. in October. Doubtless the explanation of the high January ratio is to be found in the difficulties of operation during the extraordinarily severe weather of last winter.

Table IV, drawn from the bulletins of the Bureau of Railway Economics, presents for ten months of the calendar year 1912

whereas the decrease runs as high as 33.5 per cent. in January, and amounts to 10 per cent. in September. Although in one month of the ten—January—there was an actual decrease in operating revenues, the bad showing in net revenue is almost wholly due in the South to an increase in operating costs that more than offset any increase in revenue. The territory west of the Mississippi has shown wide variations from month to month in net revenue per mile. Three of the months show decreases and one an increase of less than one-tenth of 1 per cent. The last four months, July to October, show substantial increases and are a reflection of the traffic conditions in that section. It is gratifying to observe that the increase in both gross and net revenue per mile for the southern and western territories is larger in October than in any preceding month of the year. In the East, the gross figure for October is nearly equal to the highest month, but the net figure does not occupy relatively so favorable a position.

The accompanying diagram shows graphically the per mile figures of operating revenues, expenses and net by months for the twelve months of 1910 and 1911, and for the ten months of 1912.

In a discussion in the *Gazette* a year ago of the probable future of railway earnings, the following statement was made: "Improvements in railway earnings do not usually come suddenly or without certain well-recognized harbingers of bettered conditions. Such harbingers have not yet appeared in clear outline upon the horizon."

The figures discussed in this article may in my opinion fairly be accepted as the preliminary indications of a changing financial situation. The heavy crops and the recurring talk of car short-

TABLE IV.—MONTHLY REVENUES AND EXPENSES PER MILE OF LINE, JANUARY TO OCTOBER, 1912, BY GROUPS.
(From monthly bulletins of Bureau of Railway Economics.)

Month of 1912.	Eastern Group				Southern Group				Western Group			
	Oper. Rev.	Oper. Exp.	Net Op. Rev.	Per cent.	Oper. Rev.	Oper. Exp.	Net Op. Rev.	Per cent.	Oper. Rev.	Oper. Exp.	Net Op. Rev.	Per cent.
	Am't per mile. 1912.	or dec. from 1911.	Am't per mile. 1911.	or dec. from 1911.	Am't per mile. 1912.	or dec. from 1911.	Am't per mile. 1911.	or dec. from 1911.	Am't per mile. 1912.	or dec. from 1911.	Am't per mile. 1911.	or dec. from 1911.
January	\$1,595	+ .7	\$1,251	+1.5	\$344	—2.0	\$798	—5.9	\$624	+6.4	\$175	—33.5
February	1,613	+12.0	1,231	+9.1	382	+22.8	844	+5.4	605	+9.2	239	—3.1
March	1,837	+9.8	1,309	+8.8	528	+12.2	912	+2.4	645	+8.0	267	—8.9
April	1,585	—4.2	1,218	+5.8	367	—27.2	855	+7.5	628	+11.2	227	—1.6
May	1,731	—1.1	1,256	+3.8	475	—11.9	858	+6.1	627	+8.4	231	+ .4
June	1,900	+7.3	1,276	+4.8	624	+12.7	821	+6.3	597	+7.9	224	+2.4
July	1,929	+9.9	1,295	+9.4	634	+10.9	838	+6.5	624	+11.3	214	—5.5
August	2,114	+9.4	1,349	+9.2	765	+9.9	893	+5.6	632	+8.2	261	— .2
September	2,023	+6.1	1,342	+7.7	681	+3.2	875	+1.1	620	+6.5	255	—10.0
October	2,102	+11.7	1,398	+11.1	704	+12.8	981	+8.9	668	+9.6	313	+7.3
									1,039	+13.3	606	+10.9

(a) Less than one-tenth of one per cent.

the per mile operating figures of railways having \$1,000,000 or more of operating revenues annually, distributed into the three geographical groups of Eastern, Southern and Western railways. This table also shows the increase or decrease of the 1912 figure as compared with 1911. In the territory east of the Mississippi and north of the Ohio and Potomac there has been, with the exception of the two months of April and May, an increase in gross operating revenues per mile. These two unfavorable months show also a heavy falling off in net operating revenue, but the remaining eight months, except January, show increases, running as high as 22.8 per cent. in February. The business recovery of the last few months has not benefited the Eastern roads to the same degree that it has those of the West. Although July and August showed substantial increases in gross, there was a considerably less recovery in September, so that whereas net for July shows 10.9 per cent. increase, that for September is only 3.2 per cent. However, the October figures show a return to the more favorable condition of the earlier months, with an increase in net of 12.8 per cent. The year has not been a happy one for railways lying in the territory east of the Mississippi and south of the Ohio and Potomac. Only three months out of the ten—May, June and October—show increases over 1911 in net operating revenue per mile, and these increases, except that of October, are only slight,

ages strengthen the force of this prediction. One should, however, refrain from too great optimism thus early in the period of recovery, for even though gross earnings continue to increase, an increasing proportion must be absorbed into expenses to compensate for the severe economies that many of the roads have been practicing for the past two years. Yet that the figures of net operating revenue per mile will in the absence of unforeseen and disturbing causes, show an increase during the calendar year 1913, over those of 1912, seems more than probable.

JAPANESE RAILWAY EARNINGS.—Traffic on the Kiushu division of the Imperial Government Railways of Japan flourished during the fiscal year ended March 31, 1912, the receipts exceeding \$7,000,000, or about 14 per cent. of the total receipts of the entire system of Japan, which amounted to \$50,230,626 for the same period, viz.: Passenger and freight receipts, \$48,781,446; mail contracts, \$502,980; other sources, \$946,200. The estimated receipts of the Kiushu division for the fiscal year ending March 31, 1913, are placed at \$7,189,986 for passenger and freight traffic, and the expenditures for the same year at \$2,885,420. Extraordinary expenditures are estimated at \$1,159,249, including \$388,400 for the construction of stations, \$184,000 for track, and \$174,000 for bridges.

CARS AND LOCOMOTIVES ORDERED IN 1912.

The Heavy Orders in the Last Half of the Calendar Year Makes the Record for 1912 the Best Since 1906.

In the following table are presented, in accordance with the annual custom of the *Railway Age Gazette*, detailed statements of the new freight cars, passenger cars and locomotives ordered by the concerns and railroads of the United States, Canada and Mexico in the year 1912. Although the compilation of figures from such numerous sources is subject to some slight omissions, the results are sufficiently accurate to meet the general purpose for which these statistics have been prepared, namely, to show the character and extent of the purchases of rolling stock in 1912 as compared with previous years.

Practically all the data is derived from official sources, but in a few instances where no replies have been made to our inquiries figures taken from our regular weekly records have been used. The following statements refer only to new cars and locomotives ordered since January 1, 1912; statistics of equipment built or completed during the year are given elsewhere in this issue. Taken as a whole the orders placed this year have been more satisfactory than at any time since 1906. They have been general and steady as a rule, but particularly heavy in October and November. The manufacturers will start the new year with orders on their books ranging up to 200 per cent. greater than on January 1, 1912. Instances of decreases in unfilled orders from the first of the year are neglig-

ible, and as a whole there are about 50 per cent. more cars on the books than there were a year ago.

The tables show that during the year there were ordered 234,758 freight cars, 3,642 passenger cars, and 4,515 locomotives. Of the freight cars, 8,533 are all wood; 104,125 have steel underframes, 50,013 are all-steel and 72,087 were not specified. Of the passenger cars 389 are all wood, 557 have steel underframes, 2,023 are all steel and 673 were not specified. Of the locomotives, 4,282 are simple and 158 are compound. Of the freight cars, 76,774 are equipped with friction draft gear and 44,526 with spring draft gear, the balance were not specified. Of the passenger cars, 1,087 are electric lighted. Of the locomotives, 2,622 are equipped with superheaters and 130 with feedwater heaters.

The figures or orders for cars and locomotives during the past 12 years, as compiled by this paper are as follows:

Cars				Cars			
Year.	Locomo-tives.	Passen-ger.	Freight.	Year.	Locomo-tives.	Passen-ger.	Freight.
1901....	4,340	2,879	193,439	1907....	3,482	1,791	151,711
1902....	4,665	3,459	195,248	1908....	1,182	1,319	62,669
1903....	3,283	2,310	108,936	1909....	3,350	4,514	189,360
1904....	2,538	2,213	136,561	1910....	3,787	3,881	141,204
1905....	6,265	3,289	341,315	1911....	2,850	2,623	133,117
1906....	5,642	3,402	310,315	1912....	4,515	3,642	234,758

FREIGHT CARS ORDERED IN 1912

Purchaser.	No.	Kind.	Capacity.	Builder.
Ala., Tenn. & Nor.....	bh150	Box	80,000	Amer. Car & Fdy.
	bh40	Gondola	80,000	Amer. Car & Fdy.
	bh60	Flat	80,000	Amer. Car & Fdy.
Alexander & Baldwin, Ltd.	b25	Flat	60,000	Amer. Car & Fdy.
Alger Sullivan Lbr. Co.	gh60	Logging	60,000	Amer. Car & Fdy.
Algoma Cent. & Hud. Bay	70	Gen. serv.	.....	Canadian Car & Fdy.
Algoma Eastern	bh70	Hart-Otis	100,000	Canadian Car & Fdy.
	ah24	Flat	80,000	Canadian Car & Fdy.
	bh25	Box	80,000	Canadian Car & Fdy.
Algoma Steel Corp.....	a15	Gen. serv.	100,000	.....
Alliquippa & Southern...	aj100	Hopper	100,000	Amer. Car & Fdy.
	aj20	Dump	100,000	Standard Steel
Allis Chalmers	b1	Logging	.....	Canadian Car & Fdy.
American Lbr. Co.....	25	Log	120,000	Orange Iron Wks.
American Linseed Co....	a10	Tank	80,000	Amer. Car & Fdy.
American Refining Co....	a25	Tank	80,000	Amer. Car & Fdy.
American Refrig. Trans.	500	Refrig.	.....	Amer. Car & Fdy.
American Zinc Co.....	50	Tank	.....	German-American
Anglo-Am. Tar Prod. Co.	a10	Tank	100,000	Amer. Car & Fdy.
Arizona & New Mex....	bh24	Box	100,000	Amer. Car & Fdy.
	bh12	Box	80,000	Amer. Car & Fdy.
Arizona Copper Co.....	g12	Flat	40,000	Amer. Car & Fdy.
Armour Car Lines	bj500	Refrig.	60,000	Company shops
Arms Pal. Horse Car Co.	b25	Horse	80,000	.....
Aitch., Top. & Santa Fe.	1,000	Refrig.	.....	Amer. Car & Fdy.
	1,000	Box	.....	Standard Steel
	25	Ore	.....	National Dump
	d500	Box	.....	Pullman
	25	Ore	.....	Pullman
	900	Refrig.	.....	Amer. Car & Fdy.
	900	Gondola	.....	Amer. Car & Fdy.
	900	Furn.	.....	Amer. Car & Fdy.
	1,000	Box	.....	Amer. Car & Fdy.
	250	Auto	.....	Amer. Car & Fdy.
	500	Furn.	.....	Amer. Car & Fdy.
	200	Tank	.....	Amer. Car & Fdy.
	500	Box	.....	Western Steel
	100	Flat	.....	Western Steel
	50	Dump	.....	Western Wheeled Sc.
Atlantic Coast Line.....	bj1,000	Box	60,000	Mt. Vernon C. & M. Co.
	aj100	Flat	80,000	Standard Steel
	gh25	Caboose	.....	Cent. Loco. & Car
	aj500	Flat	80,000	Mt. Vernon C. & M. Co.
Baldwin Lbr. Co.....	25	Log	80,000	Orange Iron Wks.
Baltimore & Ohio.....	aj3,000	Gondola	100,000	Cambria Steel
	aj5	Gondola	60,000	Ralston
Bangor & Aroostook ...	bh50	Flat	80,000	Amer. Car & Fdy.
Bangor Ry. & Elec.....	1	Gravel	.....	Simplex Car
Barber Asphalt Pav. Co.	g15	Flat	40,000	Amer. Car & Fdy.
Barrett Mfg. Co.....	100	Tank	.....	Amer. Car & Fdy.
Bessemer & Lake Erie...	a500	Gondola	100,000	Standard Steel
	bf402	Box	100,000	Standard Steel
	a100	Box	100,000	Summers Steel
	aj14	Hopper	100,000	Ralston
Bessemer Refining Co...	a14	Tank	60,000	Amer. Car & Fdy.
	a25	Tank	80,000	Amer. Car & Fdy.
Bethlehem Steel Co.....	50	Coke	.....	Amer. Car & Fdy.
Bingham & Garfield....	20	Gen. serv.	.....	Pressed Steel
	60	Gondola	.....	Standard Steel
Birmingham & No. West.	50	Box	60,000	Cent. Loco. & Car
Birmingham So.	60	Freight	.....	Standard Steel
Boston & Albany.....	bj3,000	Box	80,000	Amer. Car & Fdy.
	bj1,000	Box	80,000	Keith Car & Mfg.
	bj800	Gen. serv.	100,000	Pressed Steel
	bj400	Flat	100,000	Standard Steel
	bj100	Rodger bal.	100,000	Rodger Ballast

Purchaser.	No.	Kind.	Capacity.	Builder.
Boyne City Gaylord & Alpera	g25	Flat	80,000	Amer. Car & Fdy.
Buffalo Creek & Gauley..	aj300	Hopper	100,000	Pressed Steel
Buff., Roch. & Pittsb....	ah100	Flat	100,000	Standard Steel
	ah1,000	Hopper	100,000	Cambria Steel
Calumet & Hecla Min. Co.	b20	Ore	80,000	Amer. Car & Fdy.
Calumet, Ham'd & S.E.	a35	Steel	100,000	.....
Camacho, Roldan & Van Sickel	g12	Box	30,000	Amer. Car & Fdy.
	g4	Cattle	30,000	Amer. Car & Fdy.
Cambria & Indiana.....	a400	Hopper	100,000	Cambria
Canadian Northern	g1,500	Box	60,000	Nova Scotia
	b650	Box	60,000	Canadian Car & Fdy.
	g500	Box	60,000	Canadian Car & Fdy.
	g50	Box	60,000	Rathbun
	g200	Box	60,000	Crossen Car
	700	Box	60,000	.....
	100	Auto	60,000	Crossen Car
	g1500	Flat	60,000	Crossen Car
	g300	Flat	60,000	Rathbun
	aj250	Flat	80,000	.....
	gj324	Hart	80,000	.....
	gj50	Caboose	.....	.....
	gj10	Tank	8,000 g.	.....
	g100	Refrig.	60,000	Mt. Vernon C. & Mfg.
	g150	Stock	60,000	Crossen Car
Canadian Nor. Ontario..	gj200	Box	60,000	.....
	gj50	Coal	60,000	.....
Canadian Nor. Quebec...	gj76	Hart	80,000	.....
	gj300	Box	60,000	.....
	gj50	Flat	60,000	.....
	gj50	Coal	60,000	.....
Canadian Pacific	gj20	Caboose	60,000	.....
	1,000	Box	.....	Amer. Car & Fdy.
	2,000	Box	.....	Western Steel
	2,000	Box	.....	Standard Steel
	800	Flat	.....	Canadian Car & Fdy.
	200	Stone	.....	Canadian Car & Fdy.
	a616	Ballast	106,000	Canadian Car & Fdy.
	a400	Flat	80,000	Canadian Car & Fdy.
	a411	Gen. serv.	100,000	Canadian Car & Fdy.
	be3,000	Box	80,000	Canadian Car & Fdy.
	be5,000	Box	80,000	Canadian Car & Fdy.
	100	Auto	80,000	Canadian Car & Fdy.
	bf5,000	Box	80,000	Barney & Smith
	865	Stock	60,000	Company shops
	522	Refrig.	60,000	Company shops
	170	Flat	60,000	Company shops
	38	Horse	60,000	Company shops
	3,000	Box	80,000	Company shops
	1,141	Box	80,000	Company shops
	20	Dump	100,000	Canadian Car & Fdy.
	1,500	Box	80,000	National Steel
	500	Box	80,000	Nova Scotia
	200	Stone	80,000	Nova Scotia
	20	Tank	.....	Amer. Car & Fdy.
Cananea Cons. Copper Co.'s Ry.	ah12	Dump	60,000	Pullman

a Indicates all-steel cars. e Indicates composite body cars.
b Indicates steel underframe cars. f Indicates steel frame cars.
c Indicates all-composite cars. g Indicates all-wood cars.
d Indicates composite underframe cars. h Indicates spring draft gear.
j Indicates friction draft gear.

Purchaser.	No.	Kind.	Capacity.	Builder.	Purchaser.	No.	Kind.	Capacity.	Builder.
Carolina, Clinch. & Ohio.	bj475	Box	60,000	Amer. Car & Fdy.	Escanaba & L. Superior.	bfj300	Auto	80,000	Amer. Car & Fdy.
Cavicchi & Pagano.....	bj25	Stock	60,000	Amer. Car & Fdy.	Fordey Lumber Co.....	bfj1,000	Box	.....	West. Steel Car & Fdy.
Central Cal. Trac Co.....	g5	Box	60,000	Canadian Car & Fdy.	Galv., Harrisb. & S. A..	bfj500	Box	.....	Standard Steel
Central New England...	1,000	Box	.....	Keith Car & Mfg.	Georgia, Fla. & Ala.....	g100	Flat	80,000	Mil. Refrig. & Trans.
	50	Flat	.....	Keith Car & Mfg.	Georgia Refining Co.....	g10	Logging..	40,000	Amer. Car & Fdy.
	b8	Caboose..	.....	Laconia	Georgia So. & Florida...	b500	Box	100,000	Pullman
Central of Georgia.....	b500	Box	80,000	Amer. Car & Fdy.		b250	Flat	100,000	Bettendorf
Central of New Jersey..	bh500	Gondola..	100,000	Amer. Car & Fdy.		a100	Work	100,000	Bettendorf
Central of New Jersey..	bj500	Coal	100,000	Amer. Car & Fdy.		100	Freight ..	.....	Cent. Loco & Car
	bj500	Coal	100,000	Standard Steel		a20	Tank	60,000	Amer. Car & Fdy.
	aj1,000	Coal	100,000	Standard Steel		bh208	Box	60,000	Lenoir
Central Pacific	b800	Box	100,000	Pullman		bh60	Flat	80,000	Lenoir
	b200	Flat	100,000	Bettendorf		bj63	Box	100,000	Western Steel
	a200	Work	100,000	Bettendorf		aj50	Flat	100,000	Mt. Vernon Car & Mfg.
Chanute Refining Co....	a10	Tank	100,000	Amer. Car & Fdy.		bj25	Cabin	.....	.....
	a20	Tank	80,000	Amer. Car & Fdy.		gh250	Refrig.	60,000	Amer. Car & Fdy.
Charlotte Harbor & Nor.	aj30	Phosphate.	80,000	Pressed Steel		gh250	Refrig.	60,000	Canadian Car & Fdy.
Charleston & W. Carolina	24	Ballast	100,000	Rodgers Ballast		bh250	Auto	60,000	Amer. Car & Fdy.
Chess & Wymond Co.....	g15	Flat	30,000	Amer. Car & Fdy.		bh250	Auto	60,000	Western Steel
Chic. & Eastern Illinois..	bfj2,800	Coal	100,000	Amer. Car & Fdy.		bfh2,000	Box	60,000	Pressed Steel
	bfj200	Hart conv.	100,000	Amer. Car & Fdy.		bh300	Flat	60,000	Amer. Car & Fdy.
Chic. & North Western..	bj350	Caboose..	60,000	Mt. Vernon Car & Mfg.		ah50	Tank	60,000	Amer. Car & Fdy.
	g1550	Refrig.	60,000	Haskell & Barker		1,000	Ore	.....	Haskell & Barker
	g160	Caboose..	.....	Company shops		500	Auto	.....	Haskell & Barker
	bj1,000	Box	80,000	Pullman		600	Ballast	100,000	Amer. Car & Fdy.
	aj1,000	Ore	100,000	Pullman		g35	Refrig.	100,000	Barney & Smith
	bj500	Flat	100,000	Pullman		5,000	Box	80,000	Haskell & Barker
	bj1,500	Box	80,000	Amer. Car & Fdy.		500	Auto	80,000	Haskell & Barker
	bj2,000	Gondola..	100,000	Amer. Car & Fdy.		1,750	Refrig.	60,000	Haskell & Barker
	aj25	Tank	80,000	Amer. Car & Fdy.		1,400	Flat	80,000	Haskell & Barker
Chicago, Burl. & Quincy.	a3,000	Gondola..	.....	Amer. Car & Fdy.		600	Rodg. bal.	100,000	Amer. Car & Fdy.
	500	Flat	.....	Haskell & Barker		40	Tank	.....	Amer. Car & Fdy.
	1,000	Gondola..	.....	Haskell & Barker		gh2	Caboose..	.....	Georgia Car & Loco.
	2,000	Freight	.....	Haskell & Barker		g15	Logging..	60,000	Amer. Car & Fdy.
Chicago Great Western..	aj415	Gondola..	100,000	Pressed Steel		12	Flat	100,000	Amer. Car & Fdy.
Chicago, Ind. & Louis..	bfj900	Box	80,000	Haskell & Barker		a500	Gondola..	100,000	Amer. Car & Fdy.
	bfj100	Auto	80,000	Haskell & Barker		ahj500	Coal	115,000	Amer. Car & Fdy.
Chicago, Mil. & St. Paul.	bj2,000	Box	80,000	Company shops		5	Caboose..	.....	Company shops
	bj1,000	Box	80,000	Company shops		g11	Unloader.	60,000	Canadian Car & Fdy.
	bj30	Box	80,000	Company shops		g1	.....	60,000	Canadian Car & Fdy.
	bj325	Dump	40,000	Company shops		b700	Box	100,000	Pullman
	bj3,000	Box	80,000	Company shops		a100	Gondola..	100,000	Bettendorf
	aj1,000	Rodg. bal.	100,000	Amer. Car & Fdy.		b100	Stock	80,000	Standard Steel
Chic., R. I. & Pacific....	bj500	Refrig.	80,000	Amer. Car & Fdy.		aj1,000	Gondola..	100,000	Amer. Car & Fdy.
	aj350	Gondola..	100,000	Standard Steel		aj750	Gondola..	100,000	Standard Steel
	ah350	Gondola..	100,000	Standard Steel		aj750	Gondola..	100,000	Pressed Steel
	bh2,500	Box	80,000	Pullman		aj3,000	Gondola..	100,000	Bettendorf Axle
	bh500	Furn.	80,000	Pullman		gh30	Caboose..	.....	Mt. Vernon Car & Mfg.
	ah250	Flat	100,000	West. Steel Car & Fdy.		500	Flat	.....	Bettendorf
	bh450	Furn.	80,000	West. Steel Car & Fdy.		b30	Box	80,000	Amer. Car & Fdy.
	bh25	Caboose..	.....	West. Steel Car & Fdy.		g50	Box	80,000	Haskell & Barker
	bh500	Ballast	100,000	Rodger Ballast		g75	Gondola..	80,000	Haskell & Barker
Chic., St. P., Minn. & O.	bh15	Caboose..	.....	Mt. Vernon		g25	Hopper..	80,000	Haskell & Barker
	aj500	Gondola..	100,000	Amer. Car & Fdy.		a20	Tank	100,000	Amer. Car & Fdy.
Chicago Short Line.....	bj500	Box	80,000	Amer. Car & Fdy.		g60	Logging..	60,000	Amer. Car & Fdy.
Chic., Terre Haute & S-E.	bj500	Flat	100,000	Amer. Car & Fdy.		bfh500	Box	60,000	Canadian Car & Fdy.
	bj500	Coal	100,000	Haskell & Barker		gh100	Hart conv.	80,000	Canadian Car & Fdy.
	aj900	Coal	100,000	Haskell & Barker		ah100	Flat	80,000	Canadian Car & Fdy.
	10	Caboose..	.....	Haskell & Barker		ah50	Dump	100,000	Canadian Car & Fdy.
Clarendon & Pittsford...	a15	Flat	100,000	Amer. Car & Fdy.		gh20	Refrig.	60,000	Canadian Car & Fdy.
Cold Blast Transp. Co...	bj200	Refrig.	.....	Haskell & Barker		ah1	Tank	8,000 g.	Canadian Car & Fdy.
Copper Range	gh5	Gondola..	.....	Amer. Car & Fdy.		ah100	Flat	80,000	Canadian Car & Fdy.
Craig Oil Co.....	a10	Tank	80,000	Amer. Car & Fdy.		ah50	Hart-Otis.	100,000	Canadian Car & Fdy.
Cumberland Valley	bj20	Stock	100,000	Altoona shops		bh20	Stock	60,000	Canadian Car & Fdy.
	bj13	Box	100,000	Altoona shops		gh10	Refrig.	60,000	Canadian Car & Fdy.
Danville & Western.....	gh40	Box	60,000	Lenoir Car Works		bfh250	Box	60,000	Canadian Car & Fdy.
Delaware & Hudson	bh100	Hopper..	85,000	Company shops		gh120	Box	60,000	Company shops
	bh300	Hopper..	60,000	Company shops		gh10	Caboose..	.....	Company shops
	bh400	Box	60,000	Company shops		bf623	Box	60,000	Nova Scotia
	500	Box	.....	Amer. Car & Fdy.		g150	Box	.....	Nova Scotia
Delaware, Lack. & West.	500	Gondola..	.....	Amer. Car & Fdy.		1	Motor wk.	.....	.....
	250	Hopper..	.....	Amer. Car & Fdy.		a100	Tank	80,000	Amer. Car & Fdy.
	500	Box	.....	Barney & Smith		g75	Rodg. bal.	80,000	Amer. Car & Fdy.
	200	Hopper..	.....	Amer. Car & Fdy.		1	Trail wk.	.....	.....
	400	Refrig.	.....	Standard Steel		b4	Flat	100,000	Bettendorf Axle
Delaware River & Union.	aj50	Tank	80,000	Amer. Car & Fdy.		aj1	Gen. serv.	100,000	Ralston
	aj50	Tank	80,000	Chicago Steel Car		aj1,000	Gen. serv.	100,000	Ralston
Denver & Rio Grande...	bh700	Box	80,000	Standard Steel		bh100	Hart conv.	100,000	Amer. Car & Fdy.
	ah350	Gondola..	100,000	Pressed Steel		bj1,000	Gondola..	80,000	Amer. Car & Fdy.
	ah100	Stock	80,000	Amer. Car & Fdy.		b200	Flat	100,000	Bettendorf Axle
	bh50	Caboose..	60,000	Haskell & Barker		b100	Auto	80,000	Mt. Vernon Car & Mfg.
	bh7	Box	80,000	Company shops		aj5	Gen. serv.	100,000	Ralston
	gh2	Box	50,000	Company shops		a30	Tank	80,000	Amer. Car & Fdy.
	gh1	Stock	50,000	Company shops		200	Refrig.	.....	Amer. Car & Fdy.
	ah1	Stock	80,000	Company shops		a17	Tank	100,000	Amer. Car & Fdy.
Denver, N.W. & Pac...	300	Gondola..	.....	Pressed Steel		a29	Tank	80,000	Amer. Car & Fdy.
	125	Stock	.....	Amer. Car & Fdy.		bl,000	Refrig.	80,000	Merch. Desp. Trans.
Detroit & Mack.....	b19	Box	80,000	Barney & Smith		g20	Logging..	50,000	Amer. Car & Fdy.
	b16	Box	60,000	Barney & Smith		1,000	Hopper..	.....	Amer. Car & Fdy.
	200	Box	.....	Amer. Car & Fdy.		ah92	Flat	80,000	Western Steel
	4	Refrig.	.....	Amer. Car & Fdy.		bh8	Flat	80,000	Standard Steel
Dixie Route	g60	Flat	60,000	Company shops		g10	Log., flat.	80,000	Amer. Car & Fdy.
	g10	Box	60,000	Company shops		g12	Logging..	40,000	Amer. Car & Fdy.
Dominion Bridge Co....	g1	Unloader.	60,000	Canadian Car & Fdy.		bh250	Box	60,000	Amer. Car & Fdy.
Dominion Coal Co.....	a25	Coal	100,000	Canadian Car & Fdy.		bh250	Box	60,000	Standard Steel
	g50	Coal	30,000	Canadian Car & Fdy.		ah100	Hopper..	100,000	Cambria
Dominion Eq. Co.....	g3	Unloader.	60,000	Canadian Car & Fdy.		bh250	Refrig.	50,000	Pullman
Dom. Iron & Steel Co...	g10	Limestone	.....	Canadian Car & Fdy.		bh250	Refrig.	50,000	Standard Steel
Duluth & Iron Range...	10	Refrig.	.....	Peterler		ah100	Gondola..	100,000	Amer. Car & Fdy.
Duluth, So. Shore & Atl.	400	Ore	.....	Amer. Car & Fdy.		aj58	Flat	80,000	Mt. Vernon Car & Mfg.
	100	Flat	80,000	Amer. Car & Fdy.		g65	Logging..	60,000	Amer. Car & Fdy.
Duluth, Win. & Pac....	g150	Coal	60,000	.....		g10	Logging..	40,000	Amer. Car & Fdy.
E. Jersey R. R. & Term.	a5	Tank	80,000	Amer. Car & Fdy.		bh100	Stock	80,000	Company shops
Co.	a7	Tank	60,000	Amer. Car & Fdy.		b225	Box	80,000	Amer. Car & Fdy.
East Br. T. R. R. & C. Co.	ah10	Hopper..	60,000	Pressed Steel		bh750	Box	80,000	Company shops
E. Tenn. & W. N. C....	gj10	Hopper..	60,000	Company shops		bh200	Vent. box	80,000	Company shops
Edgar Lumber Co.....	g15	Logging..	40,000	Amer. Car & Fdy.		bh100	Refrig.	80,000	Company shops
Edmonton Radial	a1	Self-cl.	.....	Canadian Car & Fdy.		bh200	Flat	80,000	Company shops
Elgin, Joliet & Eastern..	bh250	Gondola..	100,000	Pullman		bh400	Gondola..	100,000	Company shops
	ah250	Hopper..	100,000	Pullman		bh55	Caboose..	.....	Company shops
	ah250	Hopper..	100,000	Standard Steel					
El Paso & Southwestern.	ah100	Ballast	100,000	Amer. Car & Fdy.					
Erie	aj500	Coke	80,000	Pressed Steel					

a Indicates all-steel cars.
b Indicates steel underframe cars.
c Indicates all-composite cars.
d Indicates composite underframe cars.

e Indicates composite body cars.
f Indicates steel frame cars.
g Indicates all-wood cars.
h Indicates spring draft gear.
j Indicates friction draft gear.

Purchaser.	No.	Kind.	Capacity.	Builder.
Louisiana Ry. & Nav. Co.	bh600	Hopper...	100,000	Company shops
	bh200	Ore	100,000	Company shops
	bh100	Auto	80,000	Company shops
	b125	Gondola...	.....	Amer. Car & Fdy.
	b50	Box .....	.....	Amer. Car & Fdy.
Madera Sugar Pine Co.	a300	Rack	80,000	Laconia
Magnolia Petrol. Co.	g10	Logging...	30,000	Amer. Car & Fdy.
Maine Central	a106	Tank	100,000	Amer. Car & Fdy.
	b10	Caboose...	.....	Laconia
	b500	Heater ..	60,000	Laconia
	b10	Rodg. ball.	100,000	Amer. Car & Fdy.
Malcolm, Thos.	g20	Logging...	60,000	Canadian Car & Fdy.
Mapimi Ry.	4	Tank	3,000 g.	.....
Meadow River Lumb. Co.	bj60	Refrig. ..	80,000	Company shops
Merch. Desp. Transp. Co.	g20	Logging...	50,000	Amer. Car & Fdy.
Mexican Eagle Oil Co.	a12	Box	40,000	Mt. Vernon Car & Mfg.
Mexican Ry.	a25	Tank	100,000	Amer. Car & Fdy.
	a6	Flat	40,000	Mt. Vernon Car & Mfg.
Midland Valley	g4	Box	60,000	Mt. Vernon Car & Mfg.
	g9	Coal	80,000	Mt. Vernon Car & Mfg.
Milliken Refining Co.	41	Tank .....	.....	German-American
Mineral Point Zinc Co.	a50	Tank	100,000	Amer. Car & Fdy.
Minn., St. P. & S. S. M.	bj1,500	Box .....	.....	Amer. Car & Fdy.
	aj300	Ore	100,000	Amer. Car & Fdy.
	aj200	Flat	80,000	Amer. Car & Fdy.
	bj200	Ballast...	80,000	Amer. Car & Fdy.
	bh20	Caboose...	.....	Amer. Car & Fdy.
Missouri & No. Arkansas.	bh50	Furn.	60,000	Amer. Car & Fdy.
	ah150	Flat	80,000	Amer. Car & Fdy.
	bh175	Box	80,000	Amer. Car & Fdy.
Missouri, Kans. & Texas.	1,500	Box	60,000	Amer. Car & Fdy.
Missouri, Okla. & Gulf...	gh25	Box	80,000	Barney & Smith
	gh50	Flat	80,000	Barney & Smith
	gh50	Ballast ..	80,000	Amer. Car & Fdy.
	gh12	Caboose...	.....	Sheffield Car & Eq.
	gh25	Flat	60,000	Sheffield Car & Eq.
	gh6	Ice	60,000	Sheffield Car & Eq.
Missouri Pacific	bh500	Auto	80,000	Amer. Car & Fdy.
	bh500	Furn.	80,000	Amer. Car & Fdy.
	bh500	Box	80,000	Amer. Car & Fdy.
	bh500	Box	80,000	Amer. Car & Fdy.
	bh400	Stock	80,000	Amer. Car & Fdy.
	bh500	Stock	80,000	Mt. Vernon Car & Mfg.
	th2,000	Gondola...	100,000	Amer. Car & Fdy.
	bh500	Flat	80,000	Amer. Car & Fdy.
Mobile & Ohio.....	bh50	Auto	60,000	Amer. Car & Fdy.
	bh140	Box	60,000	Mt. Vern. Car Mfg.
	bh60	Box	80,000	Mt. Vern. Car Mfg.
	ah334	Gondola...	100,000	Mt. Vern. Car Mfg.
	gh7	Caboose...	.....	Lenoir
	ah1	Flat	80,000	Lenoir
	ah1	Scale	100,000	Amer. Car & Fdy.
	gh15	Box	80,000	Mt. Vernon Car Mfg.
Mont., Wy. Southern....	gh25	Gondola...	80,000	Mt. Vernon Car Mfg.
	bh92	Flat	80,000	West Steel C. & F.
Morrell & Co., Jno....	b50	Refrig. ..	60,000	Amer. Car & Fdy.
Mt. Lmb. Co. of Durango.	b125	Log	80,000	Bettendorf Axle
Munising, Mar. & S. E.	bh8	Charcoal...	80,000	West Steel C. & F.
	b4	Flat	80,000	Canadian Car & Fdy.
Mussens, Ltd.....	bj200	Box	80,000	Amer. Car & Fdy.
Nash., Chatt. & St. L....	g2	Box	16,000	Company shops
National Rys. of Mex....	a225	Tank	100,000	Amer. Car & Fdy.
	2	Tank	6,500 g.	Amer. Car & Fdy.
Nevada Cty. Nar. G....	a400	Hopper...	100,000	Cambria
N. Eng. Coal & Coke Co.	bh400	Box	80,000	A. C. & F. Co.
New Orleans & N. E....	g86	Box	60,000	Amer. Car & Fdy.
	g12	Gondola...	80,000	Amer. Car & Fdy.
	g12	Flat	80,000	Amer. Car & Fdy.
N. Orleans, Mob. & Chic.	bh100	Gondola...	100,000	A. C. & F. Co.
New Riv. & Pocoh. Cons.	a200	Hopper...	100,000	Cambria
Coal Co.	b1,000	Refrig. ..	80,000	Merch. Desp. Tr.
N. Y. C. & H. R.....	1,000	Gondola...	.....	Amer. Car & Fdy.
	b2,000	Refrig. ..	80,000	Merch. Desp. Tr.
	b15	Milk .....	.....	Laconia
N. Y., Chic. & St. L....	aj500	Gondola...	100,000	Cambria Steel
N. Y. N. H. & H.....	bh300	Box	80,000	Standard Steel
N. Y., Ont. & West....	bh100	Flat	80,000	Standard Steel
	bh50	Refrig. ..	80,000	Standard Steel
	bh50	Stock	80,000	Standard Steel
	800	Box .....	.....	Amer. Car & Fdy.
N. Y., Phila & Norf....	50	Gondola...	.....	Ralston Steel
	aj1,500	Hopper...	115,000	Company shops
Norfolk & Western.....	aj1,000	Gondola...	115,000	Company shops
	aj1	Gondola...	180,000	Company shops
	bj25	Cabin .....	.....	Company shops
	500	Box .....	.....	Mt. Vernon C. & Mfg.
	500	Stock .....	.....	Ralston
	bh500	Box	60,000	Amer. Car & Fdy.
Norfolk Southern	b2	Caboose...	.....	Mt. Vernon C. & Mfg.
North & So. Carolina....	bh1,500	Refrig. ..	70,000	Amer. Car & Fdy.
Northern Pacific.....	ah1,000	Gondola...	100,000	Pressed Steel
	bh1,500	Box	80,000	Amer. Car & Fdy.
	aj50	Tank	8,000 g.	Pressed Steel
	bh1,100	Refrig. ..	70,000	Pullman
	ajh200	Ore	100,000	Pressed Steel
	ah250	Stock	80,000	Whipple Car
	bh2,500	Box	80,000	Pullman
	aj10	Tank	12,000	Pressed Steel
	bh300	Auto	80,000	Amer. Car & Fdy.
	gh500	Flat	70,000	Company shops
	gh50	Caboose...	.....	Company shops
	bh600	Box	80,000	Company shops
Northwestern Pacific ...	aj15	Gondola...	100,000	Cambria Steel
	aj6	Tank	12,500 g.	Cambria Steel
	bj10	Box	100,000	Pullman
	bj20	Work	100,000	Bettendorf
	bj20	Stock	80,000	Standard Steel
	aj10	Dump	80,000	Kilbourne Jacobs
	g5	Box	60,000	Holman
Oakland, Antioch & E....	g10	Flat	60,000	Holman
	g6	Ballast ..	60,000	Holman
	10	Flat .....	.....	.....
Ohio Electric.....	14	Trailer ..	.....	.....
	2	Utility ..	.....	.....
Oregon & California....	b100	Box	100,000	Pullman

Purchaser.	No.	Kind.	Capacity.	Builder.
Oregon Short Line.....	b50	Flat	100,000	Bettendorf
	a100	Work	100,000	Bettendorf
	b500	Box	100,000	Pullman
	b500	Stock	80,000	Standard Steel
	g20	Caboose...	.....	Standard Steel
Oregon-Wash. R. R. & Nav. Co.....	b1,000	Box	100,000	Pullman
	g6	Caboose...	.....	Pullman
	g6	Caboose...	.....	Standard Steel
Ouachita & No. West....	g20	Logging...	50,000	Amer. Car & Fdy.
Pacific Fruit Exp.....	b3,098	Refrig. ..	60,000	Amer. Car & Fdy.
Paris & Mt. Pleasant....	bh12	Box	80,000	Amer. Car & Fdy.
Penn. Lines West.....	bj1,000	Box	100,000	Western Steel
	aj800	Coke	110,000	Cambria Steel
	bj400	Gondola...	100,000	Standard Steel
	bj600	Gondola...	100,000	Amer. Car & Fdy.
	aj200	Coke	110,000	Standard Steel
	bj500	Auto	100,000	Pressed Steel
	bj500	Auto	100,000	Amer. Car & Fdy.
	bj5	Refrig. ..	100,000	Company shops
	bj10	Gun	150,000	Company shops
	aj1,000	Coke	110,000	Pressed Steel
	aj500	Coke	110,000	Amer. Car & Fdy.
	aj1,000	Coke	110,000	Standard Steel
	aj500	Coke	110,000	Cambria Steel
	bj600	Box	100,000	Standard Steel
	bj600	Box	100,000	Amer. Car & Fdy.
	bj1,000	Box	100,000	Western Steel
	aj1,000	Coke	110,000	Pressed Steel
	1,000	Coke .....	.....	Pressed Steel
Pennsylvania R. R.....	1,000	Coke .....	.....	Cambria Steel
	200	Coke .....	.....	Cambria Steel
	1,000	Gondola...	.....	Amer. Car & Fdy.
	800	Coke .....	.....	Standard Steel
	400	Freight...	.....	Altoona shops
	875	Refrig. ..	.....	Altoona shops
	3,000	Box .....	.....	Pressed Steel
	1,000	Auto .....	.....	Pressed Steel
	1,000	Box .....	.....	Altoona shops
	a700	Hopper...	110,000	Cambria
	gh5	Box	50,000	Company shops
Petaluma & Santa Rosa..	100	Rodg. bal.	.....	Amer. Car & Fdy.
Phelps, Dodge & Co....	bj500	Gondola...	100,000	Cambria Steel
Philadelphia & Reading..	aj1,000	Hopper...	110,000	Cambria Steel
	bj500	Gondola...	100,000	Amer. Car & Fdy.
	bj1,000	Box	85,000	Amer. Car & Fdy.
	aj1,000	Hopper...	110,000	Amer. Car & Fdy.
	aj10	Cabin .....	.....	Company shops
	bj1	Poling .....	.....	Company shops
Pierce Fordyce Oil Assn.	a71	Tank	100,000	Amer. Car & Fdy.
	a17	Tank	80,000	Amer. Car & Fdy.
	a60	Tank	60,000	Amer. Car & Fdy.
Pioneer Iron Co.....	bh8	Charcoal...	80,000	Western Steel
Pittsburgh & Shawmut...	aj250	Hopper...	100,000	Amer. Car & Fdy.
Pittsburgh & L. E.....	500	Coal .....	.....	Pressed Steel
	1,500	Coal .....	.....	Standard Steel
	1,000	Hopper...	.....	Pressed Steel
	1,000	Hopper...	.....	Standard Steel
	g10	Logging...	60,000	Amer. Car & Fdy.
Poinsett Lum. & Mfg. Co.	gh20	Flat	80,000	Seattle Car & Fdy.
Portland Ry., Light & Power	a80	Tank	80,000	Amer. Car & Fdy.
Portsm. Cot. Oil Ref. Co.	gh15	Hart-Otis.	60,000	Company shops
Prince Edward Island...	h1	Tank	3,000 g.	Company shops
	b2	Caboose...	.....	Mt. Vernon Car Mfg.
Quanah, Acme & Pac...	gh100	Rack	60,000	Company shops
Quebec Central	bj10	Gondola...	100,000	Standard Steel
Raritan River	ahj50	Gondola...	100,000	Standard Steel
Richmond, Fred. & Pot..	bj500	Box	80,000	Amer. Car & Fdy.
Rutland	fbj1,800	Coal	100,000	Amer. Car & Fdy.
St. Louis & San Fran-	fbj400	Hart con.	100,000	Amer. Car & Fdy.
cisco	fbj1,000	Box	80,000	Amer. Car & Fdy.
St. Louis Southwestern..	gh20	Caboose...	.....	Amer. Car & Fdy.
San Antonio & Aran. P.	1,000	Box .....	.....	Amer. Car & Fdy.
	5	Freight...	60,000	Mt. Vernon Car & Mfg.
San Pedro, Los Ang.	bh350	Box	100,000	Pullman
Savannah & Southern...	20	Flat	60,000	Cent. Loco. & Car
	15	Box	60,000	Cent. Loco. & Car
Seaboard Air Line.....	bh1,000	Box	60,000	Pressed Steel
	ah200	Hopper...	100,000	Pressed Steel
	bh25	Caboose...	60,000	Mt. Vernon Car & Mfg.
Southern Cotton Oil Co.	a12	Tank	80,000	Amer. Car & Fdy.
Southern Pacific	b1,100	Box	100,000	Pullman
	b250	Flat	100,000	Bettendorf
	a200	Work	100,000	Bettendorf
	g10	Caboose...	.....	Standard Steel
	aj20	Dump	100,000	Ralston
Southern Ry.....	bh600	Box	80,000	Lenoir
	bh275	Box	60,000	Lenoir
	bh150	Auto	60,000	Lenoir
	ah100	Flat	100,000	Lenoir
	aj2	Well	135,000	Lenoir
	a10	Tank	60,000	Amer. Car & Fdy.
Spencer Kellogg's Sons..	g8	Box	40,000	Mt. Vernon Car. & Mfg.
Surrey, Suss. & South-	ah25	Hopper...	100,000	Can. Car & Fdy.
ampton	b50	Hopper...	30,000	Can. Car & Fdy.
Sydney & Louisburg....	b4	Box .....	.....	Can. Car & Fdy.
Temiskaming & North.	g25	Logging...	60,000	Amer. Car & Fdy.
Ont.	g35	Flat	80,000	Amer. Car & Fdy.
Texas, Okla. & E.....	bh4	Way .....	.....	Amer. Car & Fdy.
Texas So. East.....	1,250	Freight...	.....	National Steel
Toronto, Hamil. & Buff..	250	Rodg. bal.	.....	Canadian Car & Fdy.
	ah10	Flat	80,000	Can. Car & Fdy.
Tremont & Gulf.....	ahj60	Flat	80,000	Bettendorf
Tremont Lbr. Co.....	b60	Logging...	80,000	Bettendorf Axle
Twin Mountain & Pot...	bj10	Gondola...	50,000	Amer. Car & Fdy.

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e Indicates composite body cars.

f Indicates steel frame cars.

g Indicates all-wood cars.

h Indicates spring draft gear.

j Indicates friction draft gear.

Purchaser.	No.	Kind.	Capacity.	Builder.
Ulster & Delaware.....	bj7	Box	50,000	Amer. Car & Fdy.
	gj2	Ballast	44,000	Amer. Car & Fdy.
	bj50	Box	80,000	Pullman
Union	aj1,009	Flat	100,000	Pullman
Union Cot. Oil Co. of Cal.	a8	Tank	100,000	Amer. Car & Fdy.
	a1	Tank	80,000	Amer. Car & Fdy.
	a2	Tank	60,000	Amer. Car & Fdy.
Union Pacific	bl,000	Box	100,000	Pullman
	a200	Gondola	100,000	Bettendorf
	b100	Stock	80,000	Standard Steel
	g20	Caboose		Standard Steel
Union Petroleum Co....	a25	Tank	60,000	Amer. Car & Fdy.
Union Refr. Transit Co..	b500	Refrig.	60,000	Amer. Car & Fdy.
Union Tank Line.....	1,000	Tank		Pressed Steel
Utah Ry.	aj25	Gen. serv.	100,000	Ralston
	b3	Caboose		Mt. Vernon Car & Mfg.
Vandalia	bj235	Box	100,000	Amer. Car & Fdy.
	aj50	Gondola	100,000	Cambria Steel
	bj25	Sp. horse	100,000	Penn. R. R. shops
Virginian	aj700	Hopper	100,000	Pressed Steel
	b8	Caboose		Amer. Car & Fdy.
Wabash	ah294	Hopper	100,000	Standard Steel
	ah1,000	Stock	80,000	Amer. Car & Fdy.
	bej700	Box	80,000	Amer. Car & Fdy.
	bej500	Box	80,000	Haskell & Barker
	bej750	Auto.	80,000	Western Steel
	eh500	Hopper	80,000	Company shops

Purchaser.	No.	Kind.	Capacity.	Builder.
Waterloo, Cedar Fls. & N.	g50	Gondola		Haskell & Barker
	g40	Box		Haskell & Barker
	a20	Stock		Haskell & Barker
Waters Pierce Oil Co...	a80	Tank	80,000	Amer. Car & Fdy.
	a20	Tank	60,000	Amer. Car & Fdy.
Wells Fargo & Co. Exp..	bh35	Refrig.		Amer. Car & Fdy.
Western Chem. Co.....	4	Tank		German-American
Western Live Stock Exp.	100	Stock		Whipple
Western Maryland	bh500	Gondola	100,000	Pressed Steel
	ah500	Hopper	100,000	Pressed Steel
	bh500	Gondola	80,000	Standard Steel
	ah500	Hopper	100,000	Standard Steel
	bh500	Box	80,000	Amer. Car & Fdy.
	gh30	Caboose		Company shops
Western Pacific	a60	Tank	80,000	Amer. Car & Fdy.
Westmoreland Coal Co..	a100	Hopper	100,000	Cambria
Wiscasset, Waterville & Farmington	g10	Flat	20,000	Portland Co.
Yosemite Valley	ah60	Logging	60,000	Seattle Car & Fdy.
Youngst. Sheet & T. Co.	a50	Gondola	100,000	Cambria
	a10	Hopper	100,000	Cambria

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j Indicates friction draft gear.

PASSENGER CARS ORDERED IN 1912

Purchaser.	No.	Kind.	Builder.
Ala. Tenn. & Nor.....	bf2	Passenger	Amer. Car & Fdy.
	bf2	Pass. ml. & exp.	Amer. Car & Fdy.
Algoma Central.....	4	Coaches	Preston Car
Algoma Eastern.....	ej2	First class	Can. Car & Fdy.
	ej1	Second class	Preston Car
	ej2	Pass. & baggage	Can. Car & Fdy.
Arizona & N. Mex.....	eg1	Observation	Barney & Smith
Arizona Eastern	a1	Baggage	Pullman
	1	Mail & baggage	
Arms Pal Horse Car Co.	b8	Horse	Pullman
Atch., Top. & S. F.....	b6	Horse	Barney & Smith
	b15	Smoking	Pullman
	b10	Passenger & mail	Pullman
	b10	Chair	Pullman
	b14	Jim Crow	Pullman
	a35	Coaches	Pullman
	a25	Chair	Pullman
	a20	Baggage & mail	Pullman
	a30	Baggage & exp.	Pullman
	a2	Parlor	Pullman
Atlanta & West Point..	b4	Coaches	Amer. Car & Fdy.
	b1	Dining	Amer. Car & Fdy.
Atlantic Coast Line.....	bf12	Coaches	Pullman
	bf18	Express	Pullman
	bf4	Passenger & bagg.	Pullman
Bangor & Aroostook....	bg1	Gas electric	
Bangor Ry. & Elec.....	ag3	Open	Laconia Car
Boston & Albany.....	ag20	Coaches	Amer. Car & Fdy.
	ag8	Postal	Laconia Car
	ag3	Dining	Pullman
Boston & Maine.....	bf8	Combination	Wason Mfg. Co.
	22	Coaches	Standard Steel
Boston Elevated	ag40	Prepayment	Laconia
	ag35	Prepayment	St. Louis Car
	ag20	Cambridge Sub.	Laconia
Boston, Revere B. & L..	ej4	Passenger	Laconia Car
	ej1	Combination	Laconia Car
Buffalo, Roch. & Ptgh...	eg1	Storage battery	Federal Storage Battery
	ag4	Coaches	Pullman
	ag5	Passenger & smkg.	Pullman
	ag5	Baggage	Pullman
	ag3	Baggage & mail	Pullman
Cambria & Indiana.....	bg1	Storage battery	Fed. Stor. B. Car
Canadian Northern.....	ef30	First class	
	eg2	Cafe-parlor	Barney & Smith
	eg15	Baggage	
	ej9	Baggage & mail	
	eg2	Dining	
	eg16	Sleeping	
	1	Gas electricity	Gen. Elec-Wason
	25	Second class	Crossen Car
Canadian Nor. Ont.....	ef12	First class	
	ef3	Second class	
	eg2	Cafe-parlor	
	ej4	Baggage	
	eg2	Dining	
Canadian Nor. Quebec...	ef3	First class	
	ef10	Second class	
	ej6	Excursion	
	ej2	Cafe-parlor	
	ej2	Baggage	
	ej2	Baggage & mail	
	ef2	Second class	
	ag1	Motor	
Canadian Pacific.....	eg30	Sleeping	Barney & Smith
	e30	Sleeping	Pullman
	e13	Dining	Pullman
	g15	Tourist	Canadian Car & Fdy.
	g20	Baggage & exp.	Canadian Car & Fdy.
	g10	First class	Canadian Car & Fdy.
	12	Sleeping	Company shops
	3	Compt. sleeping	Company shops
	34	Sleeping	Company shops
	12	Dining	Company shops
	8	Buffet parlor	Company shops
	42	Tourist	Company shops
	2	Colonist	Company shops
	107	First class	Company shops
	12	Second class	Company shops
	56	Baggage & exp.	Company shops
	13	Mail & express	Company shops
	1	Baggage & smok.	Company shops
	2	Horse exp.	Company shops

Purchaser.	No.	Kind.	Builder.
	1	Fruit exp.	Company shops
	50	Baggage	Company shops
Central New England....	e6	Milk	Laconia
	e4	Coaches	Laconia
	e2	Combination	Laconia
Central of New Jersey...	bf2	Combination	Company shops
	bf4	Baggage	Company shops
	ag12	Vestibule coach	Harlan & Hollingsworth
	ag9	Vestibule comb.	Harlan & Hollingsworth
Central Pacific.....	a4	Dining	Pullman
	a4	Baggage-buffet	Pullman
	a10	Baggage	Pullman
	a7	Motor	General Elec-Pullman
	a2	Elec. bagg & exp.	General Elec-Pullman
Central Vermont.....	b2	Parlor	Amer. Car & Fdy.
	b1	Dining	Amer. Car & Fdy.
Chesapeake & Ohio.....	a15	Coaches	Pullman
	a3	Passenger & bagg.	Pullman
	a2	Dining	Pullman
Chic. & North Western..	ah25	Coaches	Pullman
	ag6	Dining	Pullman
	ag4	Parlor	Pullman
	ag2	Observation parl.	Pullman
	bg3	Obs. buffet	Barney & Smith
	ah5	Coach	Amer. Car & Fdy.
	ah20	Smoking	Amer. Car & Fdy.
	ah10	Passenger coach	Pullman
	ah23	Baggage	Pullman
	ag3	Dining	Pullman
	ag4	Parlor	Pullman
	ag2	Dynamo buffet	Pullman
Chic. Burl. & Quincy....	5	Dining	Pullman
	b10	Baggage & mail	Amer. Car & Fdy.
Chic., Ind. & Louisville..	bg2	Observ. parlor	Barney & Smith
	bg1	Vestibule parlor	Barney & Smith
	bg4	Coaches	Barney & Smith
	bg2	Passenger & bagg.	Barney & Smith
	bg2	Cafe coaches	Barney & Smith
	ag2	Mail & baggage	Barney & Smith
	ag2	Postal	Barney & Smith
Chic., Mil. & P. S.....	ag2	Passenger & bagg.	General Electric
Chicago, Mil. & St. Paul.	afg9	Combination	Barney & Smith
	afg4	Sleeping	Barney & Smith
	afg2	Observation	Barney & Smith
	afg1	Buffet observation	Barney & Smith
	afg2	Cafe observation	Barney & Smith
	afg10	Tour. sleeper	Barney & Smith
	agj20	Coaches	American Car Fdy.
	agj10	Baggage	American Car Fdy.
	ag23	Full R. P. O.	American Car Fdy.
	agj10	Mail & baggage	Amer. Car & Fdy.
	afg3	Dining	Pullman
	ag1	Pass. mail & bagg.	General Electric
Chic., Ottawa & Peoria..	ag4	Passenger & bagg.	General Electric
Chic. Peoria & St. Louis.	dg4	Coaches	St. Louis Car Co.
Chic., R. I. & Pac.....	1	Motor	
	ag20	Baggage & mail	Pullman
	ag10	Passenger & bagg.	Pullman
	ag6	Dining	Pullman
	ag1	Private	Pullman
	a4	Horse	Pullman
	ag10	Baggage	American
	ag2	Gas-elec.	General Electric
Chic., St. P., M. & O..	ah7	Coaches	Amer. Car & Fdy.
	ah3	Smoking	Amer. Car & Fdy.
	ah4	Baggage	Pullman
	ah2	Combination	Pullman
	ah2	Baggage	Pullman
	ag1	Diner	Pullman
	ah2	Baggage & mail	Pullman
Cinc., Bluffton & Chic...	3	Gas electric	
Clev., Cin., Chic. & St. L.	ag1	Dining	Pullman
	ag2	Baggage & mail	Pullman
	ag4	Horse	American Car & Fdy.
	ag25	Coaches	Barney & Smith
Coal & Coke.....	ej3	Coaches	Pullman
	ej1	Passenger & bagg.	Pullman

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d Indicates composite underframe cars.
e Indicates all-wood cars.
f Indicates gas lighting.
g Indicates electric lighting.
h Indicates acetylene lighting.
j Indicates oil lighting.

Purchaser.	No.	Kind.	Builder.
Dayton, Leb. & Cin.....	ef1	Combination	.....
	ef5	Coaches	.....
Del., Lack. & West.....	a15	Coaches	Pullman
	a5	Passenger & bagg.	Pullman
Duluth & Iron Range...	ag5	Club	Barney & Smith
Duluth, So. Short & Atl...	a3	Coaches	Amer. Car & Fdy.
	bfg2	Observation cafe...	Barney & Smith
E. Tenn & W. N. Caro...	bfg2	Dining	Barney & Smith
Erie	bj1	Parlor	Cent. Loco. & Car
	bg25	Sub. coaches	Standard Steel
	bg11	Passenger & bagg.	Standard Steel
	55	Coaches	Standard Steel
Galveston, Harb. & S. A.	bg5	Coaches	Barney & Smith
	a3	Dining	Pullman
	a3	Coaches	Pullman
	a6	Baggage	Pullman
	3	Mail & baggage	.....
Grand Trunk.....	b15	Sleeping	Pullman
	g10	Second class	Canadian Car & Fdy.
	g5	Colonist	Canadian Car & Fdy.
	b5	Tourist	Pullman
	b6	Dining	Pullman
	e10	Colonist	Pullman
	b6	Cafe-parlor	Pullman
	b10	Coaches	Pullman
Great Northern.....	2	Gas. elec.	Gen. Elec.-Wason
Green Bay & W.....	bj1	Pass. & baggage	Cent. Loco. & Car
Hocking Valley	cbg6	Coaches	Pullman
Houston & Texas Cent..	a2	Cafe & observ.	Pullman
	a5	Coaches	Pullman
	2	Mail & baggage	.....
Illinois Central	ag4	Dining	Pullman
	ag10	Coaches	Amer. Car & Fdy.
	ag10	Comp. coach	Amer. Car & Fdy.
	ag20	Coach & smoking	Amer. Car & Fdy.
	ag26	Baggage	Amer. Car & Fdy.
	ag17	Mail	Amer. Car & Fdy.
	ag9	Pass. & baggage	Amer. Car & Fdy.
	ag4	Cafe coach	Pullman
	ag5	Observation	Pullman
	ag3	Parlor	Pullman
	ag10	Chair	Pullman
Illinois Traction System.	dg1	Motor	St. Louis Car Co.
Intercolonial	bfg2	Sleeping	Pullman
	bfg1	Dining	Pullman
	bfg1	Dining	Canadian Car & Fdy.
	bfg2	Sleeping	Canadian Car & Fdy.
	ef6	Coaches	Preston C. & C.
	ef3	Baggage	Preston C. & C.
	ef1	Coach	Canadian Car & Fdy.
International & Gt. Nor.	b6	Chair	Amer. Car & Fdy.
	b7	Coaches	Amer. Car & Fdy.
	b7	Baggage	Amer. Car & Fdy.
	a3	Postal	Amer. Car & Fdy.
Inter-Urban	1	Motor line	.....
	1	Motor express	.....
Jamestown, Chaut. & L. E.	a1	Motor	McKeen
Kanawha & Michigan...	bf3	Passenger	Pullman
	bf2	Baggage & mail	Pullman
Kewaunee, G. B. & West.	bj1	Pass. & baggage	Cent. Loco. & Car
Lake Shore & M. S.....	ag15	Coaches	Barney & Smith
	ag15	Baggage	Standard Steel
	ag2	Dining	Pullman
	ag5	Pass. & baggage	Standard Steel
	ag10	Smokers	Amer. Car & Fdy.
	ag6	Horse	Amer. Car & Fdy.
Lehigh Valley	ag3	Buf. baggage	Pullman
Long Island R. R.....	ag15	Pass. & mail	Amer. Car & Fdy.
	ag12	Pass., mail & bagg.	Amer. Car & Fdy.
	ag8	Coaches	Amer. Car & Fdy.
Louisville & Nashville...	bj3	Coaches	Company shops
	bj1	Chair	Company shops
	bj2	Baggage	Company shops
	bg1	Comb. coach	Company shops
	bg13	Vest. coach	Company shops
	bg4	Recl. chair	Company shops
	bg2	Dining	Company shops
	bg2	Mail & baggage	Company shops
Louisv., Hend. & St. L.	eg3	.....	Barney & Smith
Louisiana & Northwest...	ej2	Coaches	Barney & Smith
Louisiana Southern	ag2	Gas. elec.	Gen. Elec.-Wason
Louisiana Western	a5	Coaches	Pullman
	2	Mail & baggage	.....
Maxton, Alma & Southb.	eh1	Baggage & pass.	E. H. Wilson
	eh1	Coach	E. H. Wilson
Michigan Central	ag20	Coaches	Barney & Smith
	ag10	Baggage	Standard Steel
	ag2	Dining	Pullman
Middle Tennessee	2	Coaches	Cent. Loco. & Car
Minneapolis & Nor.....	a2	Motor	McKeen
Minn., St. P. & S. S. M.	ag22	Coaches	Barney & Smith
	ag12	Sleepers	Barney & Smith
	ag3	Mail	Barney & Smith
	ag12	Mail & express	Barney & Smith
	ag2	Diners	Barney & Smith
	ag2	Baggage	Barney & Smith
	ag1	Cafe-observ.	Barney & Smith
	ag1	Buf. baggage	Barney & Smith
Minn., St. Paul, Roch. &			
Dubuque	bcg2	Coaches	Wason Mfg. Co.
Missouri & N. Ark.....	2	Gas. elec.	Gen. Elect.-Wilson
Missouri, Kan. & Texas.	a5	Postal	Pullman
	a5	Coach & mail	Pullman
	a3	Baggage & mail	Pullman
	a10	Baggage	Pullman
	a5	Chair	Pullman
Missouri, Okla. & G....	ej2	Chair	Barney & Smith
	ag6	Motor	St. Louis Car
Missouri Pacific	af14	Mail	Amer. Car & Fdy.
	bg15	Baggage	Amer. Car & Fdy.
	bg10	Coaches	Amer. Car & Fdy.
	bg11	Chair	Amer. Car & Fdy.
	ag1	Motor	Gen. Elec.
Mobile & Ohio	ag3	First class	Pullman
	ag3	Second class	Pullman
	ag4	Baggage & mail	Pullman
	ag1	Express	Pullman

Purchaser.	No.	Kind.	Builder.
Morgan's La. & Tex.			
R. R. & S. S. Co.....	a5	Coaches	Pullman
	3	Mail & baggage	.....
Nat. Rys. of Mex.....	e47	Coaches	Amer. Car & Fdy.
	e21	Bagg., ml. & exp.	Amer. Car & Fdy.
	e10	Baggage	Amer. Car & Fdy.
Nash., Chatt. & St. L...	ag6	Coaches	Pullman
	ag4	Postal	Pullman
	ef1	Baggage	Company shops
New Iberia & Nor.....	2	Gas. elec.	Gen. Elec.-Wason
New Or., Mobile & Chic.	af2	Express	Amer. Car & Fdy.
	af2	Mail & baggage	Amer. Car & Fdy.
	ag3	Coaches	Amer. Car & Fdy.
	ag3	Chair	Amer. Car & Fdy.
N. Y. C. & H. R.....	ag100	Passenger	Amer. Car & Fdy.
	ag40	Baggage	Barney & Smith
	ag2	Dining	Pullman
	ag30	Pass. & baggage	Standard Steel
	ag20	Smoker	Barney & Smith
	ag15	Baggage	Pressed Steel
	ag19	Coaches	Pressed Steel
	ag6	Pass. & baggage	Pressed Steel
	ag2	Dining	Barney & Smith
	ag50	Coaches	Amer. Car & Fdy.
	e34	Milk	Merch. Desp. Trans.
N. Y., N. H. & H.....	ag2	Dining	Pullman
	ag2	Buff. observ.	Pullman
	ag2	Parlor & baggage	Pullman
	ag8	Parlor	Pullman
	bg7	Parlor	Pullman
	bg5	Sleeping	Pullman
	ag22	Postal	Laconia
	b20	Milk	Laconia
	ag13	Motor	Standard Steel
	ag26	Trailer	Standard Steel
Norfolk & Western.....	ag10	Postal	Pressed Steel Car
	ag8	Baggage & mail	Pressed Steel Car
	ag6	Baggage & express	Pressed Steel Car
	ag35	Coaches	Harlan & Hollingsworth
	ag5	Pass. & baggage	Harlan & Hollingsworth
Northern Pacific	e25	Ref. express	Amer. Car & Fdy.
Oakland, Antioch & E...	bg4	Combination	W. L. Holman
	bg1	Parlor	W. L. Holman
	bg6	Combination	W. L. Holman
Ohio Electric	9	Motor	.....
	8	Trailer	.....
Oregon & California....	2	Mail & baggage	.....
Oregon Electric	25	Coaches	Amer. Car & Fdy.
	6	Pass. & baggage	Amer. Car & Fdy.
	bg2	Sleeping	Barney & Smith
Oregon Short Line.....	a5	Baggage	Pullman
	a3	Mail	Pullman
	a5	Chair	Pullman
	10	Mail & baggage	.....
Oregon-Wash. R. R. &			
Nav. Co.	a15	Coaches	Pullman
	a2	Baggage	Pullman
	a2	Mail	Pullman
	a2	Mail & baggage	Pullman
	a4	Cafe-observ.	Pullman
	a2	Motor	McKeen
	4	Mail & baggage	.....
Pacific Electric	a45	Interurb.	Jewett-West.
Paris & Mt. Pleasant...	ej3	Coaches	Amer. Car & Fdy.
	ej1	Combination	Amer. Car & Fdy.
Peninsular	a8	Interurb.	Jewett-West.
Penn. Lines West.....	ag29	Coaches	Standard Steel
	ag2	Baggage	Amer. Car & Fdy.
	ag8	Baggage & mail	Amer. Car & Fdy.
	ag4	Pass. & baggage	Pressed Steel
	ag6	Dining	Standard Steel
	ag5	Dining	Barney & Smith
Pennsylvania R. R.....	a26	Baggage & mail	Altoona shops
	a7	Dining	Altoona shops
	a22	Sub. coaches	Pressed Steel
	a22	Sub. coaches	Amer. Car & Fdy.
	a20	Coaches	Standard Steel
Philadelphia & Reading..	ag35	Vest. coach	Harlan & Hollingsworth
	ag15	Vest. comb.	Harlan & Hollingsworth
	ag1	Private	Harlan & Hollingsworth
Pittsburgh & L. E.....	bcg1	Coach	Wason Mfg. Co.
	1	Gas. elec.	Gen. Elec.-Wason
Port Huron & Nor.....	a2	Motor	McKeen
Portland, Eugene & E...	a13	Elec. coach	Pullman-Baldwin
	a17	Elec. coach & bagg.	Pullman-Baldwin
	a5	Elec. bagg. & exp.	Pullman-Baldwin
	a11	Elec. trail	Pullman-Baldwin
Quannah, Acme & Pacific.	1	Gas. elec.	Gen. Elec.-Wason
Richmond, Fred. & Pot..	1	Postal	Amer. Car & Fdy.
	1	Baggage & mail	Amer. Car & Fdy.
Rivera Beach & W.....	a1	Motor	McKeen
Rock Island Impr. Co...	2	Gas. elec.	Gen. Elec.-Wason
Rutland	bf4	Coaches	Osgood Bradley
	b8	Milk	Osgood Bradley
St. Louis & San Fran...	ag10	Baggage	Amer. Car & Fdy.
St. Louis, Brownsv. & M.	2	Gas. elec.	Gen. Elec.-Wason
St. Louis Southwestern.	af10	Baggage	Amer. Car & Fdy.
	af10	Combination	Amer. Car & Fdy.
	bf3	Dining	Amer. Car & Fdy.
San Ant. & Aran. Pass..	bcf2	Baggage & mail	Company shops
San Diego & Cuyamaca.	1	Coach	Cent. Loco & Car
	1	Pass., bagg. & ml.	Cent. Loco & Car
	1	Baggage	Cent. Loco & Car
San Pedro, Los A. & S. L.	af2	Pass., ml. & bagg.	Pullman
Savannah & Southern...	1	Combination	Cent. Loco. & Car.
Seaboard Air Line Ry...	ag3	Express	Pullman
	ag10	Coaches	Pressed Steel
	ag7	Pass. & baggage	Pressed Steel
	ag7	Baggage & mail	Pressed Steel
	ag6	Dining	Pullman
	e1	Coach	Laconia

a Indicates all-steel cars.

b Indicates steel underframe cars.

c Indicates composite body cars.

d Indicates composite underframe cars.

e Indicates all-wood cars.

f Indicates gas lighting.

g Indicates electric lighting.

h Indicates acetylene lighting.

j Indicates oil lighting.

Purchaser.	No.	Kind.	Builder.
Southern Pacific	e1	Combination	Laconia
	a15	Baggage	Pullman
	a7	Motor	Gen. Elec.-Pullman
	a4	Motor	McKeen
Southern Ry.	10	Mail & baggage .....	.....
	bg15	Coaches	Pullman
	ag5	Mail & baggage	Pullman
	ag5	Express	Pullman
Spokane, Port. & Seattle.	bg5	Coaches	Standard Steel
	bg6	Dining	Barney & Smith
	cbg1	Coach	Wason Mfg. Co.
	17	Coaches	Barney & Smith
Stockton Term. & E....	4	Observation	Barney & Smith
	1	Dining	Barney & Smith
	bg2	Combination	W. L. Holman
	a1	Dining	Pullman
Texas & New Orleans...	a2	Coaches	Pullman
	4	Mail & baggage .....	.....
	b8	Chair	Pullman
	b7	Coaches	Pullman
Texas & Pacific.....	a1	Motor	Amer. Car & Fdy.
	2	Gas-elec.	McKeen
	ag2	Bagg., ml. & exp.	Gen. Elec.-Wason
	bj1	Mail & express	Pullman
Texas City Term.....	1	Coach	Pullman
	bl	Private	Niles Car & Mfg.
	1	Combination	Niles Car & Mfg.
	ag3	Baggage & mail	Pullman

Purchaser.	No.	Kind.	Builder.
Union Pacific	a6	Dining	Pullman
	a5	Baggage-buffet	Pullman
	a5	Mail	Pullman
	a10	Chair	Pullman
Wabash	12	Mail & baggage .....	.....
	6	Mail & pass .....	.....
	bcg8	Pass. & baggage	Amer. Car & Fdy.
	bcg6	Chair	Amer. Car & Fdy.
Wash., Idaho & Mont. Ry.	bcg6	Coaches	Amer. Car & Fdy.
	ag5	Mail	Amer. Car & Fdy.
	bcg4	Chair-club	Amer. Car & Fdy.
	cj1	Coach	Company shops
Waterloo, Cedar Fls. & N.	g2	Combination	McGuire-Cum.
	2	Motor	McKeen
	35	Express refrig.	Am. Car & Fdy.
	bg18	Coaches	Barney & Smith
Weatherford Min. Wells, & N.W.	ag6	Mail & express	Barney & Smith
	bf5	Baggage	Barney & Smith
	a2	Elec. pass. & bagg.	Jewett-West.
	a1	Elec. exp. & bagg.	Jewett-West.

a Indicates all-steel cars.
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j Indicates oil lighting.

LOCOMOTIVES ORDERED IN 1912

Purchaser.	No.	Cylinders.	Total Weight, Engine Only.	Type.	Builder.
Akron & Barberton Belt.	1	20x24	151,000	2-6-0	Baldwin
Ala. Interstate Pow. Co	1	10x12	84,000	Shay	Lima
Ala. Tenn. Nor.....	1	20x26	150,000	4-6-0	Baldwin
	1	18x26	150,000	2-8-0	Baldwin
Alan Wood & Steel Co..	1	14x18	5,800	0-4-0	Baldwin
Algoma Central.....	†5	22x28	197,300	2-8-0	Canadian
Algoma Eastern.....	†1	22½x28	195,000	2-8-0	Montreal
	†1		142,000	2-6-0	Montreal
Alg.-Sullivan Lumb. Co..	1	18x24	113,000	4-6-0	Baldwin
Aliquippa & Southern..	2	20x26	150,000	0-6-0	H. K. Porter
American Trading Co...	2	13x18	465,000	2-6-0	Baldwin
Ann Arbor	†3	25x30	231,000	2-8-0	American
Aransas Harbor Terminal	1	19x24	118,500	0-6-0	Baldwin
Artesian Belt	1	18x26	133,950	4-6-0	Baldwin
Ashland Coal & Iron Co.	1	20x24	152,000	2-6-2	Baldwin
Atchison, Topeka & Santa Fe	*20	17½x28	268,800	4-6-2	Baldwin
	20	20x26	154,000	0-6-0	Baldwin
	20	28x32	295,900	2-10-2	Baldwin
	10	23½x32	226,300	2-8-0	Baldwin
Atlanta & St. And. Bay.	1	18x24	115,000	4-6-0	Baldwin
Atlanta & W. P.....	1	21x28	189,000	4-6-0	American
	1	19x24	119,000	0-6-0	American
Atlanta, Birm. & Atl...	†6	26x30	242,000	2-8-2	Baldwin
Atlantic Coast Line....	15	19x24	113,000	0-6-0	Baldwin
	†8	20x26	155,000	4-6-0	Baldwin
	†12	22x28	224,000	4-6-2	Baldwin
	1	17x24	98,000	0-4-0	Baldwin
Avoyelles Cyp. Co....	1	13x18	66,000	0-4-4	Davenport
Baltimore & Ohio.....	†50	26x32	282,200	2-8-2	Baldwin
	4	19x24	120,000	0-4-0	Baldwin
	1	22x26	161,000	0-6-0	Baldwin
Baltimore & Sparrows Pt.	1	14x20	67,000	0-4-0	Baldwin
Barber Asphalt Pav. Co.	1	13x20	62,000	2-6-0	Baldwin
Basket Lum. & Mfg. Co.	1		72,000	Geared	Heisler
Beaver Dam Lum. Co..	1	15x20	84,150	2-6-2	Baldwin
I. A. Bel Lumber Co..	†5	24x30	207,000	0-6-0	Baldwin
Belt Ry. of Chic.....	4	21x26	156,550	0-6-0	Baldwin
Bingham & Garfield....	*1	26x41x28	461,000	Mallet	American
	†1	19x24	116,000	2-4-0	Baldwin
Birmingham & No.-West.	4	20x24	126,000	0-6-0	Baldwin
Biwalik Mining Co....	1		156,000	Geared	Heisler
Blue Jay Lum. Co.....	†5	22x26	234,000	4-6-2	American
Boston & Albany.....	†8	21x28	163,000	0-6-0	American
	†4	23x32	234,000	2-8-0	American
	*†4	21½x34x32	354,000	Mallet	American
Boston & Maine.....	50	24x30	210,000	2-8-0	Baldwin
	20			4-6-2	American
	20			2-8-0	American
	10			0-6-0	American
Boyne City, Gaylord & Alpena	\$1	19x24	120,000	2-6-0	Baldwin
Bradley Copper Co....	1	10x12	84,000	Shay	Lima
British Columb. Elec....	5			Electric	West-Baldwin
Brownlee Lum. Co....	1		64,000	Geared	Heisler
Buckeye Steel Cast. Co.	1	20x26	129,000	0-6-0	American
Buffalo Creek	4	16&25x20	157,000	Mallet	American
Buff. Roch. & Ptgh....	†1	24½x26	258,000	4-6-2	American
	†9	26½x30	275,000	2-8-2	American
Butler Bros.	4	17x24	90,000	0-6-0	Baldwin
Butte, Anac. & Pac....	17			Electric	Am.-Gen. Elec.
Byrd Bath. Lumb. Co..	2	11x12	100,000	Shay	Lima
Cal. State Bd. of Harbor Com'rs.	1	19x24	19,000	Forney	Baldwin
	1	19x26	140,000	0-6-0	Baldwin
	1	13x20	72,550	2-6-2	Baldwin
Camp Mfg. Co.....	†4	23x28	213,000	4-6-2	Montreal
Canadian Nor.....	†15	22x26	172,000	4-6-0	Montreal
	†20	24x32	220,000	2-8-0	Canadian Fdy.
	†20	20x24	154,000	4-6-0	Montreal
	†25	23x26	188,600	2-8-0	Canadian
	20	19x26	121,000	0-6-0	Canadian
Canadian Nor. Ont.....	†10	22x26	173,000	4-6-0	Montreal
Canadian Nor. Quebec....	†6	22x26	173,000	4-6-0	Montreal
	2	19x26	123,000	0-6-0	Can. Loco. Co.
Canadian Pacific	†21	22½x28	222,000	4-6-2	Company shops
	†30	22½x28	222,000	4-6-2	Montreal
	†100	21x28	198,000	4-6-0	Montreal
	†25	21x28	198,000	4-6-0	American
	†25	21x28	198,000	4-6-0	Can. Loco. Co.
	†60	23½x32	225,000	2-8-0	Montreal
	†10	23½x32	225,000	2-8-0	Canada Fdy.
	†20	23½x32	258,000	2-8-2	Company shops
	†75	23½x32	258,000	2-8-2	Montreal
	27	18x26	137,000	0-6-0	Company shops
	†45	18x26	137,000	0-6-0	Company shops
	†8	19x24	139,000	4-6-0	Montreal
	†25	19x24	139,000	4-6-0	Company shops
	†10	19x24	146,000	4-6-0	Company shops
	†2	22½x28	222,000	4-6-2	Company shops
	†10	21x28	188,000	0-8-0	Company shops
Canadian West Lumb. Co.	1		124,000	Geared	Heisler
Carnegie Steel Co.....	2	20x26	151,000	0-6-0	American
Carolina & No. West...	\$2	20x24	146,000	2-8-0	Baldwin
Catskill Mountain.....	1	13x28	57,000	4-4-0	American
Central Iron & Coal Co.	7	17x24	128,550	2-6-2	Baldwin
Central New England...	3	32x28	198,000	0-8-0	American
Central of Georgia.....	†15	27x30	283,850	2-8-2	Baldwin
	6	23x28	222,300	4-6-2	Baldwin
Central of New Jersey...	†10	23½x28	214,400	4-6-0	Baldwin
	5	24x30	229,500	0-8-0	American
	†3	23x26	207,000	4-4-2	Company shops
Central Pacific	8			4-6-2	Baldwin
	7			0-6-0	Baldwin
Central Vermont.....	4	22x28	216,500	4-6-2	Baldwin
	3	20x26	145,200	Shay	Lima
Charleston & W. Carolina	†3	21x28	178,700	2-8-0	Baldwin
	†3	19x24	121,000	0-6-0	Baldwin
Charlotte Har. & Northern	1	18x24	104,500	4-4-0	Baldwin
Chattahoochee Valley...	1	18x24	122,000	4-6-0	Baldwin
Cherry River Boom & Lumber Co.....	1	21x24	147,050	2-8-0	Baldwin
Chesapeake & Ohio.....	*†25	22&35x32	425,000	Mallet	American
	†49	29x28	315,000	2-8-2	American
Chic. & East. Ill.....	†25	28x30	471,000	2-8-2	American
Chic. & North Western..	†29	18x24	130,500	0-6-0	Baldwin
	†4	22x26	219,000	4-6-2	American
	†7	25x28	250,500	4-6-2	American
	†15	27x32	300,000	2-8-2	American
	†45	25x32	238,000	2-8-0	American
Chic. & West. Ind.....	†5	23x28	189,000	2-6-0	Baldwin
	5	24x30	207,000	0-8-0	Baldwin
Chic. Burl. & Quincy....	100	28x32	303,400	2-8-2	Baldwin
	25	20x24	135,000	0-6-0	Baldwin
Chicago Grt. West.....	†10	27x30	283,000	2-8-2	Baldwin
Chic., Ind. & Louis.....	†16	28x30	285,000	2-8-2	American
	†3	23x28	226,000	4-6-2	American
Chicago Junction	6	20x26	148,000	0-6-0	American
	2	25x32	241,000	2-8-0	American
Chic., Mil. & P. S.....	11	25x28	253,000	4-6-2	Company shops
	11	23½x37x50	390,000	Mallet	American
	10	25x28	253,000	4-6-2	Company shops
Chic., Mil. & St. Paul...	†15	24x30	220,000	2-8-0	Company shops
	40	18x24	127,000	0-6-0	Company shops
	†40	26x30	280,000	2-8-2	Company shops
	†50	25x28	253,000	4-6-2	American
	*†5	23½x37x30	390,000	Mallet	American
	†115	26x30	280,000	2-8-2	American
	†35	24x30	220,000	2-8-0	American
Chic. River & Indiana...	†2	25x32		2-8-0	American
Chic., R. I. & Pac.....	†40	28x30	318,850	2-8-2	Baldwin
	†10	28x30	320,000	2-8-2	American
Chic., St. Paul, Minn. & Omaha	†5	18x24	130,500	0-6-0	Baldwin
	†10	27x32	300,000	2-8-2	American
	†2	25x32	238,000	2-8-0	American
	†10	23x26	186,000	4-6-0	American
Chicago Short Line.....	1	21x26	141,000	0-6-0	Baldwin
Chic., Terre Haute & S. E.	5	25x32	244,000	2-8-0	American
Cin., N. O. & T. P.....	10	27x30	273,000	2-8-2	Baldwin
Clev., Cin., Chic. & St. L.	†10	22x26	237,000	4-6-2	American
	†10	21x28	163,000	0-6-0	Lima
	†10	21x28	166,000	0-6-0	American
Cleveland Stone Co....	1	17x24	90,000	0-6-0	Baldwin
Coal & Coke.....	1	20x24	133,750	4-4-0	Baldwin

*Indicates compound.
†Indicates superheater.
‡Indicates feed water heater.

Purchaser.	No. Cylinders.	Total Weight, Engine Only.	Type.	Builder.	Purchaser.	No. Cylinders.	Total Weight, Engine Only.	Type.	Builder.
Columbia Riv. Lumb. Co.	2 22x28	177,850	2-8-0	Baldwin	Lake Superior Term. & Transfer	\$2 20x26	160,000	0-6-0	Baldwin
Connecticut Co.	2	124,000	Geared	Heisler	Lamar Lumber Co.	1 16x22	85,000	2-8-0	Baldwin
Cook Const. Co.	2 17x24	94,000	0-6-0	Davenport	Lancaster & Chester	1 19x26	130,000	4-6-0	Baldwin
Croft Lumb. Co.	1 12x12	120,000	Shay	Lima	Lehigh & New England	5 19x26	143,000	2-8-0	Baldwin
Cuyamel Fruit Co.	1 15x20	72,000	2-6-0	Davenport	Lehigh Nav. Co.	1 21x26	178,000	0-8-0	Baldwin
Cyban Amer. Sugar Co.	1 15x18	74,000	2-6-0	Baldwin	Lehigh Valley	1 11x12	100,000	Shay	Lima
Davis Supply Co.	1 12x15	140,000	Shay	Lima	Ligonier Valley Ry.	1 21x28	322,000	2-8-2	Baldwin
De Grasse Paper Co.	1	104,000	Geared	Heisler	Long Island R. R.	1 21x26	175,000	2-8-0	Baldwin
Delaware & Hudson	†27 25x30	254,000	2-8-0	American	Lorain & West Va.	†2 19x26	182,000	4-6-0	American
Del., Lack. & West	15 28x30	314,000	2-8-2	American	Louis Lumber Co.	1 21x28	137,000	0-6-0	Baldwin
	7 25x28	281,000	4-6-2	American	Louisiana & Arkansas	\$2 18x24	192,000	2-8-0	American
	12 28x30	315,000	2-8-2	American		\$2 21x28	72,000	Geared	Heisler
	7 25x28	285,000	4-6-2	American	Louisiana & Northwest	\$2 18x24	127,250	0-8-0	Baldwin
	2 25x28	287,000	4-6-2	American	Louisiana & Pacific	1 18x26	179,150	4-6-0	Baldwin
	1 25x26	287,000	4-6-2	American	Louisiana & Pine Bluff	1 16x24	134,300	4-6-0	Baldwin
	6 22x28	200,000	0-8-0	Lima	Louisiana Ry. & Nav. Co.	2 20x26	109,000	2-6-2	Baldwin
Denver & Rio Grande	†14 27x30	283,000	2-8-2	Baldwin	Louisiana Western	3	155,000	2-8-0	Baldwin
	†6 26x26	262,000	4-6-2	Baldwin		5	.....	4-6-2	Baldwin
	*†16 26x40x32	465,000	Mallet	American		4	.....	2-6-0	Baldwin
Detroit & Mack	3 21x28	185,000	4-6-0	American	Louisville & Nashville	†12 21.5x28	212,000	4-6-2	Baldwin
Detroit & Toledo Sh. L.	3 20x26	139,500	0-6-0	Baldwin		†37 23.5x30	220,000	4-6-2	Company shops
Detroit Iron & Steel Co.	1 16x24	89,000	0-4-0	American	Louisville, Hend. & St. L.	6 19x26	134,500	4-6-0	Company shops
Dixie Route	1 19x24	134,000	2-8-0	Baldwin	Lowville & Beaver R.	\$1 18x26	124,000	4-6-0	American
Duluth, So. Shore & Atl.	2 20½x26	185,000	4-6-2	American	Mac A Mac Corp.	1	84,000	Geared	Heisler
Dunnellon Phosphate Co.	1 18x26	130,000	4-6-0	Baldwin	Mahoning Ore & Steel Co.	3 20x24	127,000	0-6-0	Baldwin
East Broad Top R. R. & Coal Co.	1 19x24	150,000	2-8-2	Baldwin	Maine Central	8 23x28	198,000	2-8-0	American
East Carolina	1 18x26	128,000	4-6-0	Baldwin		2 24x28	225,000	4-6-2	American
East Carolina Lumb. Co.	2 10x16	36,500	2-6-0	Baldwin		2 20x26	142,000	0-6-0	American
East Jordan & Southern	1 17x24	90,000	2-6-0	Baldwin		1 14½x24	.....	2-6-0	Baldwin
Elgin, Joliet & E.	20 28x30	302,000	2-8-2	American	Manchester Saw Mills	1 20x26	145,900	0-6-0	Baldwin
Erie	†5 27x28	274,000	4-6-2	American	Manufact. Ry. of St. L.	1 20x26	108,000	0-6-0	Baldwin
	†30 28x32	320,600	2-8-2	American	Marsch, John	6 19x24	80,000	0-6-0	Baldwin
	30 20x26	154,000	0-6-0	Lima		1 16x24	115,000	2-8-0	Baldwin
	†45 28x32	320,600	2-8-2	Baldwin	Maryland & Penna.	\$26	108,000	0-6-0	Baldwin
	†15 28x32	320,600	2-8-2	Baldwin	Maryland Steel Co.	1 19x24	.....	Forney	Baldwin
	†1 27x28	269,000	4-6-2	American	Masteller Coal Co.	1 7x10	102,650	4-6-0	Baldwin
Escanaba & Lake Superior	\$1 20x26	149,000	2-8-0	Baldwin	Maxton, Alma & Southb.	\$1 16x24	72,000	0-4-0	Davenport
Fernwood Lumber Co.	1 20x26	149,550	2-8-0	Baldwin	Mex. Northern Pow. Co.	1 16x24	58,000	2-6-0	Baldwin
Flambeau Paper Co.	1 16x24	113,200	2-6-2	Baldwin	Mexican Union	1 14x18	115,000	0-6-0	Baldwin
Fox Bros. & Co.	1 12x18	.....	0-6-0	Baldwin	Michigan Alkali Co.	1 19x24	51,000	0-4-0	Baldwin
Frost-Johnson Lumb. Co.	2 21x28	107,000	2-6-0	Baldwin		1 12x18	163,000	0-6-0	American
Gineso. & N. W.	2 20x24	145,500	2-8-0	Baldwin	Michigan Central	†35 21x28	.....	4-6-2	American
Georgia R. R.	6 20x26	173,000	4-6-0	Baldwin		†10 22x26	163,000	0-6-0	Lima
	2 20x24	131,000	0-6-0	Baldwin		†10 21x28	113,000	4-4-0	Baldwin
Glade Lumb. Co.	1	64,000	Geared	Heisler	Midland Pennsylvania	1 18x24	51,000	0-4-0	Baldwin
Grandin Lumber Co.	2 20x24	144,500	2-8-0	Baldwin	Milwaukee Coke & Gas Co.	1 12x18	.....	Electric	West-Baldwin
Grand Rapids & Indiana	3 20x24	144,100	0-6-0	Lima	Mineral Point & Nor. Ry.	\$2 19x26	139,000	4-6-0	Baldwin
Grand Trunk	†19 23x28	225,000	4-6-2	Baldwin	Minneapolis & St. Louis	†12 22½x30	195,000	2-8-0	American
	†41 23x28	225,000	4-6-2	Montreal	Minn., Red Lake & M.	1 17x24	114,000	4-6-0	Baldwin
	15 20x26	139,500	0-6-0	Can. Loc. Wks.	Minn., St. P. & S. S. M.	†10 25x30	225,000	2-8-0	American
Grand Trunk Pacific	†25 27x30	276,000	2-8-2	American		†10 28x30	285,000	2-8-2	American
	15 23x30	208,600	2-8-0	Canadian		†5 25x28	258,000	4-6-2	American
	25 33x30	209,000	2-8-0	Montreal	Minnesota, Dakota & W.	†1 19x24	112,600	0-6-0	Baldwin
Grant, Smith & Co.	3 17x24	94,000	0-6-0	Davenport		†1 20x26	147,800	2-8-0	Baldwin
Graves Lumber Co.	1 16x24	100,000	4-6-0	Baldwin	Missouri & Louisiana	\$1 19x26	137,000	2-6-0	Baldwin
Gray Lumber Co.	1 14x20	67,280	4-6-0	Baldwin		\$1 10x12	84,000	Shay	Lima
Great Northern	*25 28½x32	450,000	Mallet	Baldwin	Missouri & No. Ark. Ry.	†2 23x28	194,000	2-8-2	Baldwin
	10 19x26	135,000	0-6-0	Baldwin		\$1 18x24	113,000	4-4-0	Baldwin
	10 19x26	135,000	0-6-0	Baldwin	Missouri, Kan. & Texas	40 26½x30	285,000	2-8-2	American
	50 28x32	287,000	2-8-2	Baldwin	Missouri, Okla. & Gulf Ry.	10 20x26	158,550	2-8-0	Baldwin
Green Bay & Western	2 19x26	136,000	2-6-0	American		*†5 21x32x30	315,700	Mallet	Baldwin
	1 19x26	126,000	0-6-0	American		†50 27x30	275,000	2-8-2	American
Greenleaf Johnson Lumb. Co.	1 16x20	85,000	2-8-0	Baldwin		†14 26x26	256,000	4-6-2	American
Greenv., Spartanb. & And. Hall & Leftwich Lumber Co.	5	.....	Electric	West-Baldwin		*†81 26x40x32	453,000	2-8-2	Baldwin
	1	84,000	Geared	Heisler	Mitsin & Co.	1 13x18	62,000	0-6-0	American
Hall & Legan Lumb. Co.	1	72,000	Geared	Heisler	Mobile & Ohio	†5 27x30	273,000	2-8-2	Baldwin
Harbor Com'rs of Quebec	3 19x26	120,000	0-6-0	Montreal		†4 24x28	233,000	4-6-2	Baldwin
Hardaway Contract'g Co.	2 14x22	64,250	0-4-0	Baldwin	Monongahela	6 21x30	192,000	2-8-0	American
	1 13x20	.....	0-4-0	Baldwin	Monongahela Connecting	†3 23x28	195,000	0-8-0	H. K. Porter
	2 12x15	140,000	Shay	Lima	Montpelier & Wells River	2 18x24	128,000	0-8-0	American
Hayden Machy. & Supply Co.	6 16x24	78,000	0-4-0	Baldwin	Moore Timber Co.	1 13x22	76,000	2-6-2	Baldwin
Hocking Valley	†5 29x28	322,500	2-8-2	American	Morgan La. & Tex. R. R. & S. S. Co.	3	.....	4-6-2	Baldwin
	†2 21x26	188,000	4-6-0	American		5	.....	2-6-0	Baldwin
Horse Shoe Lumber Co.	1	120,000	Geared	Heisler	Nat. Metallurgical Co.	1 19x24	123,000	2-6-0	Baldwin
Houston Belt & Term. Ry.	2 19x24	127,350	0-6-0	Baldwin	Nev.-Cal.-Ore.	\$2 16x20	88,000	4-6-0	Baldwin
Houston & Tex. Cent.	5	72,000	2-6-0	Baldwin	Nevada Copper Belt	1 20x26	163,000	2-8-0	Baldwin
Hydraulic Eng. Co. of Me.	1 16x24	72,000	0-4-0	Davenport	Newburgh & So. Shore	\$2 20x26	124,000	0-6-0	Baldwin
Illinois Central	†50 27x30	283,850	2-8-2	Baldwin	New Jersey Zinc Co.	1 9x14	.....	0-4-0	Baldwin
	†45 25x26	247,500	4-6-2	American	New Orleans & No. East	6 21x28	179,550	4-6-0	Baldwin
	†40 21x26	166,000	0-6-0	American		2 21x28	178,800	4-6-0	.....
Illinois Northern	1 22x26	154,000	0-6-0	Baldwin	New Or., Mobile & Chic.	†8 22x28	196,000	2-8-2	Baldwin
Illinois Southern	2 22x28	197,000	2-8-2	Baldwin		†4 22x28	197,000	4-6-2	Baldwin
Illinois Terminal	2 20x24	121,000	2-6-0	Baldwin	Newport News Ship. & Dry Dock Co.	1 15x24	70,000	0-4-0	Baldwin
Industrial Lumber Co.	1 16x24	100,700	2-6-2	Baldwin		†20 23½x26	272,000	4-6-2	American
Intercolonial	†5 22½x28	200,000	2-8-0	Montreal	N. Y. C. & H. R.	†30 26x26	270,000	4-6-2	American
	8 20x26	137,700	0-6-0	Canadian		†5 16x22	140,300	Forney	American
	†10 22x28	200,000	2-8-0	Canadian		†50 21x28	170,000	0-6-0	American
	†5 24x32	236,000	2-8-0	Can. Fdy. Co.		†50 25x32	.....	2-8-2	American
International & Gt. Nor.	10 22x30	213,550	2-8-0	Baldwin	N. Y., N. H. & H.	†6 24x28	249,000	4-6-2	Baldwin
International Paper Co.	1 18x24	115,000	0-6-0	Baldwin		24	232,000	Electric	Westinghouse
Jackson & Tindle	1 18x24	120,000	2-6-0	Lima	Niag., St. Cath. & Toronto	15 24x32	216,000	2-8-0	American
Jefferson & Northwestern	1 16x24	98,000	4-6-0	Baldwin		1	.....	Electric	West-Baldwin
Jonesboro, Lake City & E.	\$2 18x24	108,000	2-6-0	Baldwin	Norfolk & Portsm. Belt Line	\$1 19x24	110,000	0-6-0	Baldwin
Kanawha & Michigan	†10 25x30	238,000	2-8-0	American	Norfolk & Western	*†40 22½x35x32	405,000	Mallet	American
	2 19x26	229,000	2-8-4	American		†6 22½x28	147,000	4-6-2	Baldwin
Kansas City Ry.	1 18x20	320,000	Shay	Lima	Northern Pacific	†10 20x26	152,000	0-6-0	American
Kansas City Southern	1 18x20	250,000	Shay	Lima		†50 28x30	315,000	2-8-2	American
	†15	.....	2-8-0	American		†10 26x40x30	475,000	Mallet	American
Keesville, Aus. Chasm & L. Champlain	1 16x22	96,000	2-6-0	American	North Texas Lumb. Co.	1	72,000	Geared	Heisler
Kendall Lumber Co.	1 12x15	140,000	Shay	Lima	Northwestern Iron Co.	1 18x24	100,000	0-6-0	Baldwin
Kewanee, G. B. & West.	1 19x26	128,000	0-6-0	American	Northwestern Pacific	2 20x28	168,000	4-6-0	American
Keystone Mills Co.	1 14x18	58,000	2-6-0	Baldwin	Oakland, Antioch & E.	1	.....	Electric	West-Baldwin
Knight Investment Co.	1 21x26	168,000	2-8-0	Baldwin	O'Brien, McD. & O'G.	7 18x24	109,000	4-6-0	Montreal
La Belle Iron Wks.	1 16x32	96,000	2-6-0	American					
Lake Erie & West.	†5 25x32	240,500	2-8-0	American					
Lake Shore & M. S.	†20 27x30	318,000	2-8-2	American					

*Indicates compound.

†Indicates superheater.

§Indicates feed water heater.

Purchaser.	No. Cylinders.	Total Weight, Engine Only.	Type.	Builder.	Purchaser.	No. Cylinders.	Total Weight, Engine Only.	Type.	Builder.
Oliver Chilled Plow Wks.	1 17x24	90,000	0-4-0	Baldwin	Texas, Okla. & Eastern...	1 20x28	174,300	2-8-2	Baldwin
Oregon & California....	1	.....	0-6-0	Baldwin	1 16x24	103,000	2-6-2	Baldwin	
Oregon Short Line.....	20	.....	2-8-2	Baldwin	1 18x24	136,000	2-8-2	Baldwin	
	10	.....	4-6-2	American	Thurston Co. Ry.....	1 18x24	141,000	2-8-2	Baldwin
	5	.....	0-6-0	Baldwin	Toledo & Ohio Cent.....	†10 25x30	241,000	2-8-0	American
Oregon-Wash. R. R. & Nav. Co.	15	.....	2-8-2	Baldwin	Toledo, Peoria & Western	2 21x28	176,700	2-8-0	Baldwin
Ouachita & Northwest'n	1 15x20	83,100	2-6-2	Baldwin	Toronto, Hamil. & Buff.	†2 23x28	205,000	2-8-0	Montreal Loco.
Pacific & Idaho Northern	†1 20x26	171,700	2-8-2	Baldwin	†2 21x28	166,000	0-6-0	Montreal Loco.	
Pacific Electric	10	.....	Electric	West-Baldwin	Union	2 15x22	90,000	2-6-0	Baldwin
	3	.....	Electric	West-Baldwin	Union Pacific	‡2 20x26	134,000	0-6-0	American
Pacific Gas & Elec.....	1 11x16	39,000	0-4-0	American		20	.....	2-8-2	Baldwin
Palmetto Phosphate Co....	1 16x24	103,000	2-6-2	Baldwin		10	.....	2-8-2	American
Paris & Mt. Pleasant....	†1 18x24	120,000	4-6-0	Baldwin		10	.....	4-6-2	American
Peninsular	1	.....	Electric	West-Baldwin	Union Stock Yards Co..	1 19x24	120,000	0-6-0	Baldwin
Pennsylvania Lines West	‡32 24x28	204,000	2-8-0	Company shops	U. S. Metal Mfg. Co....	2 8x12	.....	0-4-0	Baldwin
	†13 19x26	117,000	0-6-0	Lima	U. S. War Dept.....	1 11x16	39,000	0-4-0	American
	†50 24x28	204,000	2-8-0	American	Vandalia	†4 24x26	263,000	4-6-0	American
Pennsylvania R. R.....	21	.....	Freight	Altoona shops		†4 22x24	169,050	0-6-0	Pa. R. R. shops
	10	.....	Switch	Altoona shops	Virginian	†10 24x28	240,945	2-8-0	Pa. R. R. shops
	26	.....	Freight	Altoona shops		*4 28&44x32	540,000	Mallet	American
	25	.....	Switch	Altoona shops		*2 28&44x32	540,000	2-8-2	Baldwin
	8	.....	Pass.	Altoona shops	Wabash	9 26x32	297,500	2-8-2	Baldwin
	24	.....	Switch	Altoona shops		18 25x30	262,700	2-8-2	Baldwin
	29	.....	Freight	Altoona shops		6 24x26	245,950	4-6-2	Baldwin
	5	.....	Switch	Altoona shops		12 21x26	153,700	0-6-0	Baldwin
	17	.....	Pass.	Altoona shops		10 25x30	262,700	2-8-2	Baldwin
	19	.....	Freight	Altoona shops	Wabash, Chester & West.	20 25x30	262,700	2-8-2	American
Peoria & Eastern.....	†10 25x30	246,000	2-8-0	American		1 19x26	120,000	2-6-0	Baldwin
Philadelphia & Reading..	†1 19x24	233,200	4-4-2	Company shops		1 17x24	90,000	4-4-0	Baldwin
	†1 26x32	325,650	2-8-2	Company shops	Wade, Clower & Wade..	1 16x24	122,000	2-6-0	Baldwin
	†5 18x24	106,000	0-4-0	Company shops	Walsh Const. Co.....	2 17x24	94,000	0-6-0	Davenport
	†5 20x28	150,000	0-6-0	Company shops	Walsh-Kahl Const. Co...	5 17x24	92,650	0-6-0	Baldwin
	†20 23x30	239,000	2-8-0	Company shops		6 17x24	94,000	0-6-0	Davenport
	†1 18x24	130,000	4-4-2	Company shops	Walville Lumb. Co.....	1	124,000	Geared	Heisler
Phila. Sub. Gas & Elec..	1 9x14	30,000	0-4-0	Baldwin	Warren, Johns. & Sal. R.	1 16x24	98,950	2-8-0	Baldwin
Pine Belt Lumb. Co.....	1 17x20	104,000	2-8-0	Lima	Washington & Old Dom.	2 19x24	128,000	2-8-0	Baldwin
Pittsburgh & L. E.....	5 22x26	99,500	4-6-0	American	Washington Southern Ry.	5 24x28	240,000	4-6-2	Baldwin
Pittsb., Al. & McKee's R.	3 16x24	130,000	.....	H. K. Porter	Waterman Lumber Co...	1 16x24	104,375	2-6-2	Baldwin
	5 18x24	130,000	.....	H. K. Porter		1 15x20	83,500	2-6-2	Baldwin
Pittsburgh Steel Co.....	1 21x26	154,000	0-6-0	American	Weatherford Min. Wells	1 20x26	148,000	2-8-0	Baldwin
Polson Logging Co.....	1 18x24	141,150	2-8-2	Baldwin	& N. W.....	†15 25x30	243,000	2-8-0	American
Poplarv. Saw Mill Co...	1	84,000	Geared	Heisler	Western Maryland.....	†10 24x28	249,300	4-6-2	Baldwin
Portland, Eug. & E.....	3	.....	Electric	West-Baldwin		1 19x24	117,300	0-6-0	Baldwin
Prescott & No. Western.	1 20½x28	173,000	2-8-2	Baldwin	Westing. Elec. & Mfg. Co.	1 15x17	200,000	Shay	Lima
Puget Sound & Baker R.	1 16x24	104,000	4-6-0	Baldwin	West. Va. Pulp & Pa. Co.	1 10x12	84,000	Shay	Lima
Pullman Co.	1 20x26	147,900	2-6-0	Baldwin		1 19x26	135,000	0-6-0	Lima
Purcell Const. Co.....	2 17x24	94,000	0-6-0	Davenport	Wilson Lumber Co.....	1 12x16	.....	2-6-0	Baldwin
Quebec Central	2 20x26	50,000	4-6-0	Canadian	Wisconsin Lumber Co...	1 11x16	.....	2-4-2	Baldwin
	†4 21x26	55,000	4-6-0	Canadian	Woodward Iron Co.....	1 24½x30	285,000	2-8-2	Baldwin
Quincy Mining Co.....	1 18x20	113,500	2-8-0	Baldwin		3 22x28	206,950	2-8-2	Baldwin
Range Lumb. Co.....	1	84,000	Geared	Heisler		1 18x24	112,000	0-6-0	Baldwin
Raritan River	1 20x24	143,900	2-8-0	Baldwin	Worth Bros.....	1 21x26	142,000	0-6-0	Baldwin
Repub. Iron & Steel Co.	1 20x26	160,000	2-8-2	Baldwin	Co.	1 17x20	102,350	0-4-0	Baldwin
Richmond, Fredr. & Pot.	†5 22x28	241,000	4-6-2	American					
	†5 22x28	235,000	4-6-2	American					
Rock Port, Langdon & No.	1 13x22	72,000	2-4-2	Baldwin					
Roper Lumber Co.....	1 9x14	.....	Forney	Baldwin					
Rowland Lumber Co....	1 11x16	.....	2-6-2	Baldwin					
Rural Valley	1 21x28	188,000	2-8-0	American					
Rutland	†6 22½x26	210,000	4-6-0	American					
St. Croix Timber Co....	1 16x24	110,500	2-6-2	Baldwin					
St. Louis & Hannibal Ry.	†1 20x24	141,850	2-6-0	Baldwin					
St. Louis & San Fran...	†40 26x30	296,000	2-8-0	American					
St. Louis Southwestern..	†18 25x30	225,000	2-8-0	Baldwin					
	†4 22x28	190,000	2-6-0	Baldwin					
	1 18x24	141,150	2-8-2	Baldwin					
Saginaw Timber Co.....	1	84,000	Geared	Heisler					
Salmon Creek Lumb. Co.	10 16x20	154,000	2-8-0	Lima					
San Antonio & Ar. Pass.	1 18x24	117,000	4-4-0	Lima					
San Ant., Uvalde & G..	1 18x24	114,000	4-6-0	American					
San Diego & S. E.....	6 25x28	265,400	4-6-2	American					
San Pedro, Los A. & S. L.	9 18x24	110,000	.....	American					
San Rafael & Atlixco...	†15 22x28	220,000	4-6-2	Baldwin					
Seaboard Air Line.....	5 19x28	144,280	0-6-0	Baldwin					
	1 16x24	86,500	0-4-0	Baldwin					
	†5 23x28	214,700	4-6-2	Baldwin					
Sewell Valley Ry.....	1 14x15	180,000	Shay	Lima					
Shelby Co. Ry.....	1 16x24	60,000	4-4-0	Davenport					
Silver Lake Rl. & Lumb. Co.	1 13½x18	81,650	2-6-2	Baldwin					
Smith, W. T., Lumb. Co.	2 16x24	86,700	2-6-0	Baldwin					
Smith, C. A., Lumber & Mfg. Co.	3 18x24	141,100	2-8-2	Baldwin					
South Carolina W.....	2 18x26	128,450	4-6-0	Baldwin					
Southern Pacific	15 21x28	179,750	2-6-0	Baldwin					
	10	.....	4-6-0	Baldwin					
	15	.....	Mallet	Baldwin					
	10 22x28	221,100	4-6-2	Baldwin					
	8 19x26	145,700	0-6-0	Baldwin					
	1	.....	Electric	West-Baldwin					
Southern	†10 24x28	233,000	4-6-2	American					
	6 24x30	211,000	2-8-0	American					
	4 20x26	148,000	0-6-0	American					
	†5 24x28	233,000	4-6-2	Baldwin					
	†30 27x30	273,000	2-8-2	Baldwin					
Southern Pine Lumb. Co.	1 17x24	114,200	2-6-2	Baldwin					
Southern	1 20x26	145,500	0-6-0	Lima					
Spokane & Int. Emp....	1	.....	Electric	West-Baldwin					
Standard Oil Co.....	1 9x14	.....	0-4-0	Baldwin					
Stone & Webster.....	4 11x12	120,000	Shay	Lima					
Superior & S. E.....	1 17x24	115,500	4-6-0	Lima					
Susquehanna & New York	1 22x28	201,000	2-8-0	Baldwin					
Sydney & Louisburg....	1 21x26	177,000	2-8-0	Montreal					
	1 19x26	129,000	2-6-0	Montreal					
Tallulah Falls	1 20x24	130,850	2-8-0	Baldwin					
Tenn., Ala. & Ga.....	2 20x24	139,000	2-8-0	American					
Terminal R. R. Assoc. of St. Louis	†15 22½x30	200,000	0-6-0	American					
Texas & N. Orleans.....	4	.....	4-6-2	Baldwin					
Texas & Pacific Ry....	10 22x30	204,000	2-8-0	Baldwin					
	10 21x28	193,800	4-6-0	Baldwin					

*Indicates compound.
†Indicates superheater.
‡Indicates feed water heater.

SURVEYS IN INDIA.—A survey will shortly be carried out by the agency of the Bombay, Baroda & Central India Railway for a line of railway on the 5 ft. 6 in. gage, from Gangapur, on the Nagda-Muttra section of the Bombay, Baroda & Central India Railway, to Luni, on the Jodhpur, Bikaner Railway, a distance of about 260 miles. This survey will be known as the Gungapur-Luni Railway survey.

SWISS MOUNTAIN RAILWAY OPENED.—The new funicular railway from Lucerne to Dietschiberg, known as the Little Righi, has been opened to traffic. The line is 1,400 yds. long, and the cost of construction was about \$70,000. It will be one of the most popular ascents in Switzerland, as the view from the summit, over 2,000 ft. above sea level, is magnificent, including many famous peaks of the Bernese-Oberland.

TRANSPORTATION OF INVALIDS IN GERMANY.—Excellent facilities are afforded in Germany for transporting invalids and cripples who are unable to walk. The German railroad system provides a first-class car for invalids who can afford to use it. This car is fitted with every possible convenience for the sick. A special compartment, opening on the level of the station platform with a double door so that a stretcher can be carried in without the slightest difficulty, is set apart for the invalid and attendants. The balance of the car contains a kitchen, where meals can be prepared, and a section handsomely upholstered for members of the family or accompanying friends. For invalids who travel second or third class an apartment on an ordinary car is used, opening in like manner with a double door on the station platform.

MILEAGE OF RAILROADS BLOCK SIGNALLED.

Extensive New Mileage of Automatic Block Signals, and
Probably Three Thousand Miles More in Nineteen Thirteen.

The length of railways worked by the block system in the United States at the end of 1912, as reported by the railroads to this office, is only about 1,500 miles greater than it was twelve months ago; but this figure is not particularly illuminating, for the increase in automatic signals alone is almost 2,000 miles. The explanation of this is found, not so much in a slackening of enterprise, but mainly in the fact that new automatic signals, increasing capacity of road and improving practice generally, have been installed in place of manual signaling. Again, some of the roads which formerly reported the manual block system as in use on lines of rather light traffic, now report a smaller mileage, indicating the abolition of the space interval; for example the Minneapolis, St. Paul & Sault Ste. Marie. Looking at automatics by themselves, there will be found a number of large increases; but this number is still small, compared with the need for signals; and the most encouraging feature of the present statement is to be found in the list of roads proposing to make extensive installations of automatic signals during the coming year.

The condensed comparison of the present totals with those published one year ago by the Interstate Commerce Commission

and reprinted in the *Railway Age Gazette* of May 10, 1912, is as follows:

	January 1, 1912.	Inc. over 1911.	January 1, 1913.	Inc. over 1912.
Automatic signals, miles of road.....	20,335	2,623	22,236	1,901
Manual	56,075	2,517	55,719	.....
Total	76,410	5,140	77,955	.....
Add item not classified (Louisville & Nashville; 60 miles automatic, 216 manual).....			276	.....
			78,231	.....
Deduct for mileage having both manual and automatic..			35	.....
			78,196	1,786

The mileage of a number of roads, as given in the table, is copied from the statement issued by the government a year ago, the reply to our request for revised figures having failed to reach us at the time of going to press. These roads are indicated in the table by a dagger. The principal ones are the Baltimore & Ohio, Chesapeake & Ohio and Lehigh Valley.

As our readers are aware, the manual block system is used by a number of American railways regularly for spacing passenger trains, while yet they use it but little or none at all for freight trains; and on these, and on a large mileage of single track lines, the protection for both passenger trains and freight,

LENGTH OF RAILWAYS WORKED BY THE BLOCK SYSTEM JANUARY 1, 1913.

(See Notes in Accompanying Text.)

Name of Railway.	Miles of road.						Total passenger lines operated.	Percentage operated under		
	Automatic block signals.			Non-automatic block signals.				Total both kinds.	block system.	Increase miles.
	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.				
Ann Arbor*	...	...	...	...	...	...	...	...	...
Arizona & New Mexico*	...	...	...	...	...	...	...	...	...
Atchison, Topeka & Santa Fe—System.....	38	170	208	1,034	529	1,563	1,771	9,847	20	87
Atlanta & West Point.....	...	...	...	...	6	6	6	86	13	...
Atlantic Coast Line.....	2	67	69	334	89	423	492	4,230	12	34
Auburn & Northern (Electric).....	7	...	7	...	...	...	7	7	10	...
Baltimore & Ohio†, incl. B. & O. S. W†.	2	291	293	2,955	875	3,830	4,123	...	...	...
Baltimore & Ohio Chicago Terminal.....	1	14	15	...	...	...	15	45	33	3
Baltimore & Sparrow's Point.....	...	...	...	2	3	5	5	5	100	...
Bessemer & Lake Erie.....	...	...	...	64	130	194	194	191	97	...
Boston & Albany.....	...	207	207	...	2	2	209	377	55	...
Boston & Maine.....	410	622	1,032	...	...	...	1,032	2,220	46	90
Boston Elevated (Elevated lines).....	...	16	16	...	...	...	16	16	100	...
Boston, Revere Beach & Lynn.....	...	14	14	...	...	...	14	14	100	...
Buffalo, Rochester & Pittsburgh¹.	53	35	88	252	76	328	416	416	100	...
Butte, Anaconda & Pacific.....	8	...	8	...	...	...	8	25	31	...
Central New England.....	14	16	30	7	...	7	37	277	13	1
Central of Georgia.....	...	...	...	52	21	73	73	1,923	4	14
Central of New Jersey.....	13	199	212	...	...	...	212	464	46	...
Chesapeake & Ohio†, incl. C. & O. of Indiana†.	...	409	409	1,348	60	1,408	1,817	...	...	...
Chicago & Alton.....	416	145	561	141	...	141	702	1,025	69	0
Chicago & Eastern Illinois†.....	...	98	98	383	55	438	536	...	...	...
Chicago & North Western.....	39	872	911	2,722	84	2,806	3,717	7,037	53	299
Chicago & Western Indiana.....	...	19	19	...	8	8	27	27	100	...
Chicago, Burlington & Quincy.....	45	50	95	7,895	712	8,607	8,702	8,951	97	...
Chicago Great Western.....	197	86	283	89	...	89	372	1,471	25	...
Chicago, Indianapolis & Louisville.....	162	...	162	416	...	416	578	578	100	53
Chicago Junction (Freight).....	...	...	...	1	...	1	1	...	...	...
Chicago, Milwaukee & St. Paul.....	6	104	110	3,301	478	3,779	3,889	6,121	65	...
Chicago, Milwaukee & Puget Sound.....	363	...	363	1,535	...	1,535	1,898	1,953	97	10
Chicago, Ottawa & Peoria (Electric).....	8	...	8	...	...	...	8	107	7	...
Chicago, Peoria & St. Louis*	...	...	...	...	...	...	...	...	...	...
Chicago, Rock Island & Pacific.....	653	283	936	998	...	998	1,934	6,952	28	...
Chicago, Rock Island & Gulf.....	33	...	33	...	...	...	33	469	7	...
Chicago, St. Paul, Minneapolis & Omaha.....	22	90	112	494	54	548	660	1,645	40	...
Chicago, Terre Haute & Southeastern¹.	...	...	...	...	...	...	...	...	...	...
Cincinnati, Hamilton & Dayton.....	19	17	36	240	30	270	306	889	34	137
Colorado Midland.....	...	...	...	2	...	2	2	261	...	...
Columbia & Puget Sound.....	10	9	19	...	...	...	19	51	37	19
Copper Range.....	3	...	3	68	...	68	71	90	8	...
Cornwall & Lebanon†.....	...	...	...	8	14	22	22	22	100	...
Cumberland & Pennsylvania†.....	...	...	...	4	3	7	7	31	23	...
Cumberland Valley.....	8	47	55	11	...	11	66	162	41	11
Delaware & Hudson.....	165	247	412	...	...	...	412	744	55	...
Delaware, Lackawann & Western.....	224	510	734	4	...	4	738	963	77	...
Denver & Rio Grande (No report).....	...	...	...	...	...	...	...	...	...	...
Duluth & Iron Range†.....	...	16	16	...	...	...	16	200	8	...
Durham & Southern.....	...	...	...	56	...	56	56	56	100	...
Elgin, Ojilet & Eastern.....	6	...	6	...	...	...	6	211	3	...
El Paso & Southwestern.....	59	...	59	...	...	...	59	968	6	59
Erie.....	4	250	254	501	546	1,047	1,301	1,704	77	...
Chicago & Erie.....	...	...	...	228	21	249	249	249	100	...
Columbus & Erie.....	...	...	...	12	10	22	22	22	100	...
Erie & Jersey (Freight).....	...	42	42	...	...	...	42	42	100	...
Genesee River.....	...	...	...	33	...	33	33	33	100	...
New Jersey & New York.....	12	11	23	14	...	14	37	52	70	...
New York, Susquehanna & Western.....	...	...	...	32	14	46	46	195	24	16
Evansville & Terre Haute (See C. & E. I.).....	...	...	...	...	...	...	...	...	...	...
Grand Trunk.....	1	78	79	808	243	1,051	1,130	1,134	...	...
Great Northern.....	10	162	172	309	...	308	480	6,782	7	58

Name of Railway.	Automatic block signals.			Non-automatic block signals.			Total both kinds.	Total passenger lines operated.	Percentage operated under block system. P. c.	Increase miles.
	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.				
Hocking Valley	...	...	...	138	...	138	138	338	36	...
Hudson & Manhattan	...	8	8	...	...	...	8	8	100	...
Illinois Central	84	319	403	11	...	11	414	4,546	9	90
Yazoo & Mississippi Valley	7	...	7	...	8	8	15	1,379	11	2
Illinois Traction†	76	...	76	...	...	...	76	...	...	...
Interboro Rapid Transit, N. Y. (Express tracks)	...	6	6	...	...	...	6	...	...	...
Iowa Central (See Minn. & St. L.)	...	...	...	2	...	2	...	159	...	...
Kanawha & Michigan	2	...	2	...	...	...	...	11	100	...
Kentucky & Indiana Bridge†	...	...	...	5	6	11	11	3	55	...
Kentwood & Eastern	...	...	...	1	2	3	3	23	...	...
Lackawanna & Wyoming Valley	...	...	...	...	...	...	...	...	...	...
Lehigh & New England*	...	...	...	...	...	...	...	...	...	...
Lehigh Valley	14	506	520	646	52	698	1,218	...	...	...
Long Island	4	108	112	5	9	14	126	359	35	...
Louisville & Nashville	...	...	60	...	...	216	276	1,186	42	22
Maine Central	436	63	499	...	...	...	499	1,186	22	70
Portland Terminal	4	11	15	...	...	...	15	22	70	...
Minneapolis & St. Louis	...	...	...	11	...	11	11	1,538	...	...
Minneapolis, St. Paul & Sault Ste. Marie	...	...	...	1,415	5	1,420	1,420	3,497	40	...
Missouri, Kansas & Texas†	8	1	9	9	...	9	18	...	...	...
Missouri Pacific	59	77	136	1,062	13	1,075	1,211	3,968	31	652
St. Louis, Iron Mountain & Southern	114	18	132	664	270	934	1,066	3,512	30	575
Mobile & Ohio	...	5	5	52	...	52	57	925	6	...
Monongahela	1/2	...	1/2	66	...	66	66	59	...	66
Munising, Marquette & Southeastern	...	...	...	4	...	4	4	126	...	...
Nashville, Chattanooga & St. Louis	...	...	93	12	105	105	1,230	9	...	...
Nevada Northern	1	...	1	...	...	...	1	165	...	1
Newburgh & South Shore	...	...	...	1	6	7	7	6	...	2
New York & Long Branch	...	38	38	...	...	...	38	38	100	...
New York Central & Hudson River†	2	675	677	1,590	763	2,353	3,030	2,880	...	...
Chicago, Indiana & Southern	...	5	5	144	59	203	208	303	69	...
Cleveland, Cincinnati, Chicago & St. Louis	2	53	55	543	326	869	924	1,865	50	...
Lake Erie & Western	10	9	19	853	...	853	872	...	...	...
Lake Shore & Michigan Southern and contr. lines	28	541	569	1,142	64	1,206	1,775	...	...	...
Michigan Central	...	272	272	901	19	920	1,192	1,192	100	...
Pittsburgh & Lake Erie	...	157	157	3	...	3	160	166	97	5
New York, Chicago & St. Louis	15	...	15	...	...	...	15	513	3	...
New York, New Haven & Hartford	16	327	343	132	267	399	742	1,959	37	15
New York, Ontario & Western	38	148	186	...	...	...	186	492	37	...
New York, Philadelphia & Norfolk	...	9	9	36	48	81	93	112	83	...
Norfolk & Western	101	416	517	1,068	...	1,068	1,585	1,856	85	...
Northern Pacific	103	377	480	674	123	797	1,277	5,424	24	...
Northwestern Pacific	14	12	26	...	...	...	26	371	7	...
Pennsylvania, East of Pittsburgh, and Erie	...	543	543	2,983	1,101	4,084	4,627	4,627	100	360
Grand Rapids & Indiana	...	...	139	2	...	141	141	537	26	83
Pennsylvania Company²	...	530	530	549	186	735	1,265	1,640	77	171
Pittsburgh, Cincinnati, Chicago & St. Louis	...	14	14	478	624	1,102	1,110	1,416	80	3
Vandalia	...	...	...	301	61	362	362	797	45	...
Peoria & Pekin Union	...	...	...	6	...	6	6	15	40	...
Pere Marquette	9	...	9	27	...	27	36	1,628	2	...
Philadelphia & Reading	31	489	520	268	87	355	875	1,316	67	...
Philadelphia Rapid Transit†	...	7	7	...	...	...	7	7	100	...
Quincy, Omaha & Kansas City, and Iowa & St. Louis	...	...	...	308	...	398	308	308	100	...
Queen & Crescent Route—	...	...	...	...	...	...	...	...	...	...
Alabama & Vicksburg	16	...	16	...	...	...	16	142	11	16
Alabama Great Southern	111	...	111	98	...	98	209	290	61	100
Cincinnati, New Orleans & Texas Pacific	250	84	334	1	...	1	335	336	...	...
New Orleans & Northeastern	93	15	108	...	...	...	108	196	55	15
Richmond, Fredericksburg & Potomac†	...	...	...	9	79	88	88	88	100	...
St. Joseph & Grand Island	...	...	...	...	...	...	...	...	...	...
St. Louis & San Francisco	694	34	728	90	...	90	818	4,742	17	...
Beaumont, Sour Lake & Western	...	...	...	84	...	84	84	118	71	...
New Orleans, Texas & Mexico	...	...	...	159	...	159	159	264	60	...
Orange & Northwestern	...	...	...	62	...	62	62	100	...	...
St. Louis, Merchants' Bridge Terminal†	...	6	6	...	1	1	7	10	70	...
St. Louis Southwestern*	...	...	...	...	...	...	...	...	...	...
San Francisco-Oakland Terminal	...	4	4	...	...	...	4	22	18	...
San Pedro, Los Angeles & Salt Lake	4	...	4	...	...	...	4	1,012	...	...
Seaboard Air Line	...	...	...	211	...	211	211	3,032	7	...
Southern	...	15	15	1,562	332	1,894	1,909	6,636	30	71
Southern Illinois & Missouri Bridge	...	5	5	...	...	...	5	5	100	...
Southern Pacific, Atlantic System—	...	...	...	...	...	...	...	...	...	...
Galveston, Harrisburg & San Antonio	279	...	279	...	...	...	278	1,270	22	...
Louisiana Western	104	...	104	...	...	...	104	140	74	...
Morgan's Louisiana & Texas	95	...	95	...	...	...	95	293	32	...
Texas & New Orleans	110	...	110	...	...	...	110	438	25	...
Southern Pacific; Pacific System³	2,227	262	2,489	73	28	101	2,555	6,616	39	51
Spokane, Portland & Seattle	...	7	7	...	...	...	7	532	...	...
Staten Island Rapid Transit	...	21	21	2	...	2	23	20	...	...
Syracuse, Lake Shore & Northern (Electric)	17	7	24	...	...	...	24	37	65	...
Terminal R. R. Association of St. Louis†	...	6	6	...	1	1	7	13	50	...
Texas & Pacific*	...	...	...	...	...	...	...	...	...	...
Tidewater Power Co. (Electric)†	...	...	...	6	...	6	6	...	...	...
Toledo, Peoria & Western*	...	...	...	...	...	...	...	...	...	...
Toledo, St. Louis & Western	...	...	...	188	...	188	188	451	42	16
Ulster & Delaware	25	...	25	...	...	...	25	128	20	...
Union (Pittsburgh)†	...	1	1	1	...	1	2	...	...	...
Union Pacific	740	730	1,470	11	...	11	1,481	3,541	42	17
Oregon-Washington Railroad & Navigation Co.	419	19	438	1	...	1	439	1,919	23	...
Oregon Short Line	519	57	576	...	...	...	576	...	...	...
Virginia & Kentucky*†	...	...	...	...	...	...	...	...	...	...
Wabash	...	63	63	1,727	88	1,815	1,878	1,955	96	50
Virginian†	...	...	...	17	...	17	17	460	4	...
Wabash-Pittsburgh Terminal	...	4	4	...	...	...	4	60	7	...
Washington, Baltimore & Annapolis (Electric)	14	...	14	...	...	...	14	...	...	14
Washington Southern†	...	6	6	...	27	27	33	33	100	...
Washington Terminal	...	2	2	...	...	...	2	29	100	...
Washington Water Power Co.†	29	...	29	...	...	...	29	29	100	...
Western Pacific	11	...	11	...	...	...	11	935	1	...
Total	9,948	12,288	22,236	46,981	8,738	55,719	77,920	...	...	...

* One mile or less.

† No report received; figures show the mileage one year ago.

‡ Buffalo, Rochester & Pittsburgh—The figures exclude a length of 20 miles which is owned by the Erie, but is operated by the B. R. & P.

§ New York Central.—There is an apparent discrepancy in mileage between total passenger lines operated and total automatic and non-automatic, due to 103.6 miles of automatic signaling on tracks 1 and 2 running parallel with 103.6 miles of non-automatic signaling on tracks 3 and 4, and to other similar conditions. Also there is a length of 17 miles not block signaled and there has been omitted 48 miles of road on which but one engine is operated.

¶ Pennsylvania, West.—Includes mileage reported last year under Cleve and, A. & C.

§ Southern Pacific, Pacific System.—The total length of road worked by the block system is 35 miles less than appears in the detail columns because there is a length of that amount on which both systems are used.

as regards opposing movements, is made partly dependent on time-table rules and on the action of the train despatcher.

Items in the column in the table showing miles of road operated exclude not only those sections used wholly for freight trains, but also, in some cases, those passenger lines on which there is but one engine in service at any one time. This is true on the Copper Range, the Grand Trunk and others. The Bessemer & Lake Erie and two or three other roads have included in their statement the mileage of one or more sections of road used entirely for freight traffic.

In 1912, as in 1911, there was a considerable mileage on which automatic block signals were installed in place of the manual block system; and in some cases it will be found that the mileage shown under the head of non-automatic signals has decreased. Prominent among the roads which have substituted automatics for manual are the Grand Trunk, the New York, New Haven & Hartford, the Norfolk & Western, the Northern Pacific and the Pennsylvania.

The Columbia & Puget Sound, the El Paso & Southwestern, the Minneapolis & St. Louis, the Alabama & Vicksburg, the Nevada Northern and the Washington, Baltimore & Annapolis appear in the table for the first time.

The increases shown in the last column of the table are found by comparison, not with our table published last December, but with the government table above referred to.

The following paragraphs give such information as we have received concerning the plans of the railways for signaling to be carried out during the year 1913. Some of these items were published, somewhat more in detail, last week.

Alabama Great Southern (Queen & Crescent).—This company plans to put the whole of its lines under the block system; seven miles new automatic, double track, and 73 miles manual single track.

Atlantic Coast Line.—Has automatic block signals now under construction on 25 miles, double track.

Boston & Albany.—Will install an all-electric interlocking of 80 levers and a mechanical plant of 60 levers at Worcester. On the Newton Highlands Branch, 10 miles, double track, the clock work signals (exposed disk) are to be replaced by normal danger three-position, upper quadrant semaphore signals.

Boston & Maine.—Will install automatic block signals on an additional length of 191 miles of road; also interlocking plants at Worcester, Barber, South Lawrence, Gardner, and North Chelmsford.

Buffalo, Rochester & Pittsburgh.—Plans to install automatic block signals, 51 miles; Gainesville to Ashford, 38 miles, Ashford to East Salamanca, 13 miles.

Chicago Great Western.—Plans to put in an all-electric interlocking at Somers, Ia., and a mechanical interlocking at Oelwein.

Chicago, Indianapolis & Louisville.—Now installing automatic block signals on 135 miles. A mechanical interlocking plant of 15 levers is to be put up at Haskells, Ind.

Chicago, Milwaukee & St. Paul.—Plans for 1913 call for the installation of automatic block signals on 454 miles of line, double track.

Chicago, St. Paul, Minneapolis & Omaha.—Will install automatic block signals on 64 miles of road, double track. Automatic block signals are under construction at the present time on a length of 19 miles, double track.

Cincinnati, Hamilton & Dayton.—Has begun the installation of automatic signals on 80 miles single track, to replace manual block system.

El Paso & Southwestern.—Plans to install automatic block signals on 40 miles of its line.

Erie.—Plans to install automatic signals in place of manual block system on 308 miles, all double track, as follows: Delaware division, Sparrowbush to Susquehanna; Buffalo division, Hornell to Buffalo; Cincinnati division, Kent to Marion. The signals will be three-position, upper quadrant.

Great Northern.—Automatic signals on several sections of

double track as heretofore noticed; and three new mechanical interlockings are to be installed at drawbridges.

Illinois Central.—Has 216 miles of automatic signals now under construction, the principal sections being as follows: Mattoon to Effingham; Mason to Branch Junction, and Branch Junction to Carbondale; Belleville to Carbondale; and Clark street, Chicago, to Hawthorne. Plans for the ensuing year include one new power and four mechanical interlocking plants.

New York Central.—The N. Y. C. & H. R. expects to complete the installation of automatic signals on the two main passenger tracks from Croton to Buffalo. This work was commenced in 1909. Also to complete the installation of automatic signals on the main freight tracks between Utica and Buffalo. This work was commenced in 1912. It is proposed to install upper quadrant signals on two main tracks of the West Shore, Mohawk Division, between Rotterdam Junction and Harbor, 67 miles, and on two main tracks of the Ontario division, between Utica and Stittville, 10 miles. Several new mechanical interlockings will be installed. These mechanical interlockings will be provided with power operated home and rear home signals and with complete electrical protection, including approach and route locking. All signals will be upper quadrant.

New York Central Lines.—The Lake Shore & Michigan Southern plans to install five electric interlockings, 137 levers and one mechanical, 34 levers. The Michigan Central's line in Canada, 245 miles, not shown in the table, is equipped with automatic block signals. The Lake Erie & Western plans to install automatic block signals on 40 miles in Indiana.

New York, Chicago & St. Louis.—Will install automatic signals on 80 miles; 68 miles single track and 12 miles double track.

New York, New Haven & Hartford.—Plans to install automatic signals on 50 miles. All-electric interlocking plants are to be put in at Brookfield, Westerly, Woodmont, and Worcester.

New York, Ontario & Western.—Expects to install automatic signals on 15 miles double track, between Livingston Manor and Hortons.

New York, Philadelphia & Norfolk.—Plans to introduce the manual block system on 17 miles.

Northern Pacific.—Has automatic block signals now under construction on 110 miles of its line, and probably during the coming year will equip about 300 miles more with automatics.

Pennsylvania.—The mileage of road shown in the table for the lines east of Pittsburgh and Erie represents all lines on which passenger trains are run except those on which only one engine is in service. These lines of light traffic, together with lines used only for freight trains, aggregate about 270 miles in length; and practically all of these lines are worked under space interval regulations. A considerable part of the freight lines have automatic block signals. The new work planned for the coming year includes 105 miles of road to be block signaled (all automatic), besides a section which is used only for freight trains. Details of this and other new work to be done on the Pennsylvania are given in another column of this paper.

Southern Pacific.—Plans to install automatic signals on 248 miles of the Pacific system; single track, 231 miles, double track, 17 miles. In addition to this, other single track lines, aggregating about 115 miles, now equipped with automatic block signals, will be double-tracked during the year and the signals will be rearranged accordingly. The plans provide for seven important new power interlockings.

Union Pacific.—On the Oregon Short Line automatic signals are now being installed between Ogden and Cache Junction, 49 miles, single track. During the coming year about 22 miles of automatic block signals will have to be rearranged in consequence of the construction of second main track. Electric interlocking plants are to be put in at McCammon Junction, eight levers; and at Hodges Pass tunnel, five levers.

The Oregon-Washington Railroad & Navigation Company expects to install automatic block signals on 110 miles of its line during the coming year; and also to install three power and one mechanical interlocking plants as heretofore noted in the *Railway Age Gazette*.

NEW RAILWAY BUILT DURING 1912.

In Addition to Mileage and the Location of First Main Track Built Statistics Include Second, Third or More Tracks.

The record of new first main track added during the calendar year, 1912, in the United States, Canada and Mexico, details of which are given below in the following tables, was compiled from official reports from the railways supplemented by our own records and from figures furnished by the state railway commissions. The total for each state does not include second, third or fourth track, sidings or relocated lines nor does it include electric lines. We show, however, in the table the number of miles of second, third, fourth and fifth track laid during 1912.

UNITED STATES.

Table Showing Mileage of New First Track Built in 1912, Classified by States.

	No. of Cos. building.	1912.	No. of Cos. building.	1911.
Alabama	2	18.50	1	25.00
Alaska	1	47.53	1	47.53
Arizona	2	105.38	1	11.60
Arkansas	4	67.19	3	28.00
California	7	78.75	10	118.38
Colorado	1	6.27	4	181.79
Florida	8	181.90	6	115.02
Georgia	11	152.75	8	122.40
Idaho	5	105.03	7	163.96
Illinois	3	24.54	3	4.61
Indiana	1	8.00	1	30.12
Iowa	4	87.54	2	18.32
Kansas	3	92.46	1	52.00
Kentucky	4	119.63	7	125.45
Louisiana	6	89.00	5	53.00
Maine	2	5.79	..	..
Maryland	1	1.00	2	21.49
Massachusetts	1	5.00	..	..
Michigan	2	7.80	3	27.45
Minnesota	4	47.26	3	40.08
Mississippi	3	20.00	2	19.20
Missouri	1	0.96	1	11.70
Montana	4	130.15	4	94.42
Nebraska	1	36.87	1	30.64
Nevada	3	47.24	1	9.00
New Jersey	..	..	2	28.46
New York	1	3.17	2	17.22
North Carolina	11	93.45	5	46.31
North Dakota	3	346.91	3	209.34
Ohio	2	12.75	2	5.75
Oklahoma	2	242.16	3	71.00
Oregon	2	24.71	7	224.21
Pennsylvania	10	68.80	9	92.99
South Carolina	4	78.50	2	32.50
South Dakota	..	..	2	21.87
Tennessee	5	28.51	2	66.00
Texas	9	335.66	10	413.78
Utah	3	24.33	2	34.30
Vermont	1	1.00	..	..
Virginia	6	9.60	3	16.66
Washington	5	105.73	4	99.39
West Virginia	6	99.22	4	84.46
Wisconsin	4	14.57	4	209.13
Wyoming	1	69.00	3	42.40
Total	161	2,997.08	146	3,066.93
Canada	20	2,232.10	19	1,898.59
Mexico	4	212.18	8	351.00

UNITED STATES.

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
Alabama		
Alabama Great Southern		
Irondale to Gate City (2nd Track)	1.45	
Birmingham & Southeastern—Talladega to Electra		14.00
Manistee & Repton—Alene to Monroeville		4.50
		18.50
ARIZONA.		
El Paso & Southwestern—Fairbanks to Tucson		66.88
Santa Fe, Prescott & Phoenix (A. T. & S. F.)—Cedar Glade to Clarksdale		38.50
		105.38
ARKANSAS.		
Ashley, Drew & Northern—Crossett to Fountain Hill		23.00
Kansas City & Memphis—Litteral to Fayetteville		7.00
Pine Bluff Arkansas River (St. L. S. W.)—Reydel to Waldstein		1.19
St. Louis, Iron Mountain & Southern—Marianna to West Memphis		36.00
Bald Knob to Little Rock (2nd Track)	9.12	
		67.19
CALIFORNIA.		
Atchison, Topeka & Santa Fe Coast Lines		
Needles to Gaffs (2nd Track)	31.10	
Keenbrook to San Bernardino (2nd Track)	12.62	
Calwa to Fresno (2nd Track)	2.56	
Central Pacific (So. Pac.)		
Between Rocklin and Colfax (2nd Track)	3.99	
Colusa & Hamilton (So. Pac.)—Between Harrington and Hamilton		11.70
Hanford & Summit Lake (So. Pac.)—Between Hardwick and Ingle		32.51

CALIFORNIA (Continued).

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
Laton & Western (A. T. & S. F. C. L.)—Lanare to Shilling		2.05
Northwestern Pacific—Between Willits and Shively		23.80
Sacramento Southern (So. Pac.)—Between Sacramento and Walnut Grove		.99
San Diego & Arizona—Dixieland west		5.00
Stockton Terminal & Eastern—Fine to Bellotta		2.70
		78.75

COLORADO.

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
Denver & Rio Grande—Reliance Junction to Ojo		6.27
Union Pacific		
Julesburg to Weir (2nd Track)	6.93	
		6.27

CONNECTICUT.

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
New York, New Haven & Hartford		
Between Hartford and Bristol (2nd Track)	.51	
Between Botsford and Shelton (2nd Track)	7.50	
Bet. Berkshire Jct. and Brookfield Jct. (2nd Track)	2.00	

FLORIDA.

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
Atlantic Coast Line—Haines City to Sebring, 46.24 miles; Florence Villa to Luzerne Park, 5.38 miles; total		51.62
Fellsmere R. R.—West of Fellsmere		1.54
Florida East Coast—Between Maytown and Tohopekee		25.00
Gulf, Florida & Alabama—Pensacola to Cantonment, 18.2 miles; in Pensacola to Marine terminals, 3.0 miles; total		21.20
Marianna & Blountstown—Blountstown to Scotts Ferry		15.00
Seaboard Air Line—Near Dunnellon to Inverness, 20.98 miles; Nichols to Mulberry, 3.53 miles; Fruitville to Venice, 16.53 miles; total		41.04
Tampa & Gulf Coast—Lakeville to Port Richey		7.50
Union Cypress Co. Line—Melbourne west		19.00
		181.90

GEORGIA.

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
Blakely Southern—Blakely to Jakin		22.00
Elberton & Eastern—Elberton to Broad River		12.00
Flemington, Hinesville & Western—To Hinesville		5.25
Flint River & Northeastern—Not specified		2.00
Gainesville & Northwestern—Gainesville to Helen		36.00
Georgia, Coast & Piedmont—Between Darien and Brunswick		8.00
Georgia Railroad		
Decatur to Clifton (2nd Track)	3.00	
Green County—Bostwick to Good Hope		8.00
Macon, Dublin & Savannah—From terminus to new junction		2.50
Ocala Southern—Between Fitzgerald and Rochelle		17.00
Southern Ry.		
Crosskeys to Duluth (2nd Track)	14.2	
Suwanee to Gainesville (2nd Track)	22.8	
Waycross & Southern—Not specified		10.00
Waycross & Western—Between Waycross and Arabia		30.00
		152.75

IDAHO.

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
Central Idaho (O. S. L.)—Blaine to Hill City		25.63
Gilmore & Pittsburg—Old terminus to Gilmore		1.25
Idaho Northern Ry.—Between Emmett and Smith's Ferry		51.00
Oregon Short Line—Bitch Creek to Driggs		18.20
Salt Lake & Idaho (O. S. L.)—Burley to Marshfield		8.95
		105.03

ILLINOIS.

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
Baltimore & Ohio Chicago Terminal		
At Chicago (2nd Track)	.87	
Chicago & Eastern Illinois		
Tuscola to Firdlay (2nd Track)	32.00	
Chicago, Burlington & Quincy		
Galesburg to Henderson (2nd Track)	4.78	
Concord to Pisgah (2nd Track)	7.42	
Des Plaines Valley (C. & N. W.)—Proviso to near Northfield		20.51
Proviso to near Northfield (2nd Track)	20.51	
Illinois Southern—Kellogg Wye to Kellogg incline		1.98
Lake Shore & Michigan Southern		
Between East Side and Englewood (3rd Track)	4.22	
Between East Side and Englewood (4th Track)	4.11	
St. Louis, Iron Mountain & Southern—From Herrin & Johnson City Ry. to Marion & Johnson City Ry.		2.05
Wabash		
Not specified (2nd Track)	83.00	
		24.54

INDIANA.

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
Baltimore & Ohio		
Between Wellsboro and La Paz Junction (2nd Track)	1.55	
Between Milford Junction and Cornwell (2nd Track)	11.74	
Chicago & Erie (Erie)		
Indiana state line to North Judson (2nd Track)	22.70	
Cleveland, Cincinnati, Chicago & St. Louis		
Indianapolis east (2nd Track)	.80	
Pennsylvania Lines West		
Dublin to Dunreith (2nd Track)	10.76	
St. Joseph Valley—Angola to Berlin		8.00
Wabash		
Not specified (2nd Track)	7.00	
		8.00

IOWA.

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
Colfax Northern—No. 9 Junction to No. 9 Shaft		1.15
Creston, Winterset & Des Moines—Creston to Macksburg		21.00
St. Paul & Kansas City Short Line (R. I. L.)—Carlisle to Allerton		64.76
Southern Iowa Traction—In Centerville		0.63
		87.54

KANSAS.		Miles 2nd and 3d Track, etc.	Miles 1st Track.
Dodge City & Cimarron Valley (A. T. & S. F.)—Dodge City to Hugoton			89.00
From 25th street to 3d street, Wichita (2nd Track)	1.84		
Missouri, Oklahoma & Gulf—Baxter Springs south		3.00	
Missouri Pacific—Missouri-Kansas state line to Kaw river bridge		.46	
		92.46	
KENTUCKY.			
Carolina, Clinchfield & Ohio—Elkhorn City south		2.00	
Chesapeake & Ohio			
Between Russell and Ohio state line (2nd Track)	10.70		
Lexington & Eastern (L. & N.)—Dumont to McRoberts		100.49	
Louisville & Nashville			
Covington to Paris (2nd Track)	83.00		
Wasioto & Black Mountain (L. & N.)—Not specified		3.52	
Williamson & Pond Creek (Nor. & West.)—From Kentucky-West Virginia state line, 11.62 miles; branch lines, 2 miles; total		13.62	
		119.63	
LOUISIANA.			
Glenmora & Western—McNary to Lisso, 2.00 miles; Lisso to Cady, 8.00 miles; Cady to Pringle, 2.00 miles; total			12.00
Between McNary and Pringle (2nd Track)	3.00		
Illinois Central			
Kenner north to New Orleans (2nd Track)	15.00		
Louisiana & Arkansas—Jena to Jonesville		22.00	
Louisiana Southern—Belair to Bohemia		20.00	
New Iberia & Northern—Adeline to Shadyside		25.00	
Oberlin, Hampton & Eastern—Hampton south		4.00	
Ouachita & Northwestern—Logging Spurs		6.00	
		89.00	
MAINE.			
Maine Central—Mainstream to Harmony		2.00	
Gray to New Gloucester (2nd Track)	4.51		
Sandy River & Rangeley Lakes—Perham Junction to Mt. Abram		3.79	
		5.79	
MARYLAND.			
Baltimore & Ohio			
At Brunswick (4th Track)	.30		
Maryland & Pennsylvania—At Baltimore		1.00	
Philadelphia, Baltimore & Washington			
At Bacon Hill (4th Track)	3.01		
Western Maryland			
Georges Creek Jct. to Penn state line (2nd Track)	18.57		
		1.00	
MASSACHUSETTS.			
Boston & Albany			
Between Cottage Farm and Chelsea (2nd Track)	2.70		
Boston & Maine			
In Greenfield (2nd Track)	1.40		
Hampden—Between Athol Junction and Bondsville		5.00	
New York, New Haven & Hartford			
Between East Providence and East Jct. (2nd Track)	3.25		
Between Harrison Square and Atlantic (3rd Track)	2.12		
Between Harrison Square and Atlantic (4th Track)	2.06		
		5.00	
MICHIGAN.			
Copper Range			
Between Houghton and Lake Mine Shaft (2nd Track)	1.86		
Between Houghton and McKeever (3rd Track)	1.84		
Detroit & Mackinac—Calcite to Rogers City		2.80	
East Jordan & Southern—Pine Ridge to Green River, 2.5 miles; Camp 21 to Dingman, 2.5 miles; total		5.00	
Grand Rapids & Indiana			
At Grand Rapids (2nd Track)	1.71		
At Grand Rapids (3rd Track)	.23		
Pere Marquette			
Between Lamar and Grandville (2nd Track)	1.80		
Between Benton Harbor and Riverside (2nd Track)	7.64		
Wabash			
Not specified (2nd Track)	39.00		
		7.80	
MINNESOTA.			
Cuyuna Northern—Not specified		5.12	
Duluth, Winnipeg & Pacific (Can. Nor.)—Not specified		17.00	
Northern Pacific—Deerwood to Ironton		5.14	
Between St. Paul and Northtown (2nd Track)	1.07		
Between St. Cloud and Rice (2nd Track)	3.82		
Minnesota, Dakota & Western—Little Fork south		20.00	
		47.26	
MISSISSIPPI.			
Batesville & Southwestern—Not specified		4.00	
Liberty White—Bridges to Tylertown		11.00	
Natchez, Columbia & Mobile—Between Jayess and Tilton		5.00	
		20.00	
MISSOURI.			
Chicago, Burlington & Quincy			
Nodaway to Forbes (2nd Track)	2.99		
Missouri Pacific			
East of Jefferson City to Cole Junction (2nd Track)	5.39		
From Cole Junction west (2nd Track)	.13		
Missouri Pacific—Missouri-Kansas state line to K. C. N. W. connection at Kansas City		0.96	
St. Louis Southwestern			
Illmo to Rockview (2nd Track)	7.50		
Idalia to Dexter Junction (2nd Track)	6.30		
Wabash			
Not specified (2nd Track)	15.00		
		0.96	
MONTANA.			
Butte, Anaconda & Pacific—Anaconda to Southern Cross		17.00	
Gallatin Valley—Bozeman to Menard		24.90	
MONTANA (Continued).		Miles 2nd and 3d Track, etc.	Miles 1st Track.
Great Northern—Between Vaughn and Gilman, 31.94 miles; between Moccasin and Lewistown, 30.27 miles; on line south of Snowden, 6.00 miles; total			68.21
Northern Pacific—Savage to Sidney			20.04
			130.15
NEBRASKA.			
Union Pacific—Callaway to Stapleton			36.87
Weir to Herdon (2nd Track)	48.20		
Dix to Kimball (2nd Track)	11.78		
			36.87
NEVADA.			
Central Pacific (So. Pac.)—Between Oreana and Rose Creek			13.58
Between Oreana and Rose Creek (2nd Track)	4.02		
Between Tecoma and Montello (2nd Track)	.11		
San Pedro, Los Angeles & Salt Lake—Moapa to St. Thomas			21.60
Southern Pacific—Fernley & Lassen branch			12.06
			47.24
NEW JERSEY.			
Central of New Jersey			
Not specified (5th Track)	3.00		
Lehigh Valley			
At Three Bridges (3rd Track)	.21		
Between Flemington Junction and Stanton (3rd Track)	2.21		
At post 53 to west of br. 53 A (3rd Track)	1.02		
Pennsylvania Railroad			
Between Waverly and Colonia (5th Track)	1.65		
Between Waverly and Colonia (6th Track)	1.65		
NEW MEXICO.			
Atchison, Topeka & Santa Fe Coast Lines			
Bocca to Perea (2nd Track)	27.50		
NEW YORK.			
Boston & Albany			
At State Line (3rd Track)	.65		
Central New England			
Manchester Br. to Scotchman's Cut (2nd Track)	2.70		
Genesee & Wyoming—Retsof to Halite			3.17
Lehigh Valley			
North Le Roy to Stafford (3rd Track)	4.00		
Long Island			
Glen Cove to Locust Valley (2nd Track)	1.19		
Manhattan Beach Junction to Bay Ridge (2nd Track)	.66		
New York Central & Hudson River			
Nepperhan to Ardsley (2nd Track)	3.70		
Calcium to Philadelphia (2nd Track)	8.00		
Staatsburg to Barrytown and in Yonkers (3rd Track)	13.60		
Staatsburg to Barrytown and in Yonkers (4th Track)	13.60		
			3.17
NORTH CAROLINA.			
Aberdeen & Rockfish—Hope Mills Junction to Fayetteville			13.00
Atlantic & Western—Broadway to Lillington			16.00
Atlantic Coast Line			
Between Pleasant Hill and Battleboro (2nd Track)	35.55		
Carolina & Yadkin River—Denton to High Rock			8.00
Thomesville to Denton (2nd Track)	2.00		
Durham & South Carolina—Bonsal to Buckhorn Creek			7.00
Elkins & Allegheny—Elkins to Thurmond			12.00
Maxton, Alma & Southbound—Bracey to Rowland			3.00
Raleigh & Southport—Raleigh to Caraleigh			2.00
Raleigh, Charlotte & Southern—Colon to Varina			23.00
Randolph & Cumberland—Between Hallison and McConnell			4.00
Southern—At Highpoint			1.45
Watauga (Yadkin River)—North Wilkesboro to Browns Ford			4.00
			93.45
NORTH DAKOTA.			
Great Northern—Between Fargo and Surrey, 202.40 miles; between Niobe and International boundary 3 miles total			205.40
Minneapolis, St. Paul & Sault Ste. Marie—Fordville to Drake			130.93
Northern Pacific—Deapolis (Ft. Clark) to Stanton			10.58
Bloom to Jamestown (2nd Track)	4.83		
			346.91
OHIO.			
Akron, Canton & Youngstown—Britain to Erie Junction			2.84
Baltimore & Ohio			
Between Hamler and Holgate (2nd Track)	1.35		
Between Mark Center and The Bend (2nd Track)	1.48		
Between Holgate and East Defiance (2nd Track)	10.48		
Chicago & Erie (Erie)			
Marion to Indiana state line (2nd Track)	26.04		
Cleveland Short Line—Marcy to Collinwood			9.91
Marcy to Collinwood (2nd Track)	11.48		
Erie			
Hills to Akron (2nd Track)	1.51		
Lake Shore & Michigan Southern			
At Collinwood (3rd Track)	.15		
Between Elyria and Millbury (3rd Track)	13.49		
At Collinwood (4th Track)	.10		
Between Elyria and Millbury (4th Track)	19.26		
Pennsylvania Lines West			
Between Eagleville and Austinburg (2nd Track)	.38		
Wabash			
Not specified (2nd Track)	12.00		
			12.75
OKLAHOMA.			
Clinton & Oklahoma Western—Butler to Strong City			28.50
Fort Smith, Arkoma & Wilburton—Not specified			2.00
Missouri, Oklahoma & Gulf—Wagoner north			97.00
Sand Springs—Not specified			2.22
Wichita Falls Route—Between Leedey and Forgan			112.44
			242.16

CANADA (Continued).

	Miles 2nd and 3d Track, etc.	Miles 1st Track.
Roberts, Ont., to Woman River (2nd Track).....	18.00	
Devon, Ont., to Esher (2nd Track).....	6.30	
Depew, Ont., to Tarpon (2nd Track).....	8.00	
Huron Bay, Ont., to Peninsula (2nd Track).....	8.00	
Fire Hill, Ont., to Ruby (2nd Track).....	3.60	
Navilus, Ont., to Port Arthur (2nd Track).....	6.20	
Regina, Sask., to Pasqua (2nd Track).....	34.80	
Boharm, Sask., to Chaplin (2nd Track).....	46.00	
Calgary, Alta., Terminals (2nd Track).....	5.80	
Hammond, B. C., to Vancouver (2nd Track).....	24.00	
Central Railway of Canada—McAlpine, Ont., to Lemieux.....	20.00	
Eastern British Columbia—Corbin, B. C., south 3.00 miles; spur line 4 miles; total.....	7.00	
Esquimalt & Nanaimo (Can. Pac.)—Vancouver Island, B. C.....	20.80	
Fredericton & Grand Lake Coal & Railway—Between Gibson, N. B., and Minto.....	18.00	
Grand Trunk Pacific—Regina, Sask., towards International boundary 136 miles; Talmah towards Weyburn, 0.25 miles; Regina to- wards Moose Jaw, 40 miles; Biggar towards Calgary, 104 miles; Ohan towards Battleford, 48.5 miles; Battleford towards Wain- wright, 4 miles; Tofield, Alta., towards Calgary, 92 miles; Bick- erdike towards Brazeau, 56 miles; Yellowhead, B. C., towards Prince Rupert, 128 miles; total.....	608.75	
Ha Ha Bay—In province of Quebec.....	2.70	
Kaslo & Slogan—At Whitewater, B. C.....	0.95	
Kettle Valley—Penticon, B. C., west 7 miles.....	7.00	
National Transcontinental Ry. (Grand Trunk Pacific)—In Quebec, east of Quebec bridge between Mile 1 and Mile 8.6—7.5 miles; between Mile 109 and Mile 153—33 miles; west of Quebec bridge between Mile 288 and Mile 419—84.75 miles. In Ont- ario between Mile 168 west of Cochrane and Mile 102, east of Lake Superior Junction, 235.9 miles; total.....	361.15	
Oshawa Railway—In province of Ontario.....	1.00	
South Ontario Pacific (Can. Pac.) Mile post 5.9 to Grant Junction, Ont.....	10.40	
Temiskaming and Northern Ontario—Earlton, Ont., to Elk Lake.. Hailey's Spur to New Liskeard, Ont. (2nd Track)....	28.90	
Vancouver, Victoria & Eastern Ry. & Nav. Co. (Grt. Nor.)— Abbotsford, B. C., to Kilgord, 4.52 miles; on line Kilgord to Sumas Landing, 3.00 miles; total.....	7.52	
	2,232.10	

MEXICO.

Mexico North Western—In Chihuahua K 347 to K 362.....	10.00
National Railways of Mexico—Rio Chico, Durango west towards Ilan Grande K 90 west of Durango, 22 miles; K 28 line from Durango to Canitas to state line with Zacatecas, 46 miles; from Durango state line east towards Canitas, Zacatecas, 20 miles; K 39 S. of Penjamo Michoacan to K 124 Line Penjamo to Ajuno, 51 miles; Allende, Coahuila to K 47 Line Allende to Hacienda, San Carlos, 29 miles; total.....	168.00
Southern Pacific of Mexico—In state of Jalisco.....	2.18
Vera Cruz & Isthmus (N. R. of M.)—K 29, Vera Cruz to San Andres Tuxtla, 27.00 miles; Cosmoloapam, Vera Cruz to San Cristobal, 5 miles; total.....	32.00
	212.18

RAIL RELAYING IN JAPAN.—The entire track of the Kiushu division of the Imperial Government Railways of Japan is to be relaid with 60-lb. rails except on steep gradients, where 75-lb. rails will be used. The old rails taken up are all 50-lb., and will be used in most cases for building switches or sold to builders of light steam railways. Rapid progress has been made in this work, and about 200 miles of track remain to be relaid out of a total of 660 miles.

PROPOSED SALE OF STRAITS SETTLEMENTS RAILWAYS.—Beginning January 1, 1912, the Railways of the Straits Settlements came under the management of the Federated Malay States government. The terms called for a lease of 21 years at an annual rental of \$95,200, subject to septennial revision. It is now proposed to sell the railways to the Federated Malay States government, and a joint committee is at present considering the question of the price to be paid.—*Consular Report.*

CONSTRUCTION IN ITALY.—Work was recently begun on the Ronco-Arquatz cut on the railway between the Italian towns of Ronco and Tortona, on the Genoa-Milan and Genoa-Turin line. This is an undertaking which will cost almost \$1,930,000, and will consist mostly of digging two tunnels, one known as the Galleria Borlasca, 10,875 ft. long, and the other, known as Galleria Giacoboni, 2,625 ft. long. Besides this, there will be a 3-arch bridge across the Scrivia river at Ronco 197 ft. long, and two smaller bridges. The station at Ronco will be enlarged, and this, with the Scrivia bridge, will cost \$96,500. The two tunnels will cost \$1,186,950. As the line will be double-tracked, the expense of track work will be \$193,000. Work in connection with the crossing of the village of Pietra Bissara will cost over \$57,900, and masonry along the Scrivia river and other similar work will cost \$135,100.

AN AUTOMATIC STOP EXPERIMENT ON THE LACKAWANNA.

Officers of the Delaware, Lackawanna & Western have given permission to the International Signal Company, 104 West Forty-second street, New York City, to install on a branch line, for test, one of its automatic train stops, the officers of the road to give necessary assistance.

The International Company's stop apparatus, like the cab signal in use on the Great Western Railway of England, is designed to check itself on the passage of every train. That is to say, it is an essential principle of the scheme that if anything about the apparatus is out of order the train will be stopped. It is a mechanical trip, but is controlled electrically. A ramp is fixed on the roadway in the path of a hanger or plunger carried on the locomotive, the upward movement of which opens a valve to apply the brakes. Thus, brakes are applied on the passage of every train, unless another arm, carried on the locomotive, is struck, almost at the same instant, by a trip on the roadway, which is movable, and works in connection with the block signals. The movable trip is in position to act on the engine arm when the way is clear; and it is turned down, so as not to act on the engine member, when the road ahead is blocked. Thus, in effect, a train is stopped, not by the action of the movable trip, but by its absence. The arm on the engine, when moved by the ground trip, closes a valve and prevents the application of brakes, which otherwise would be caused by the upward movement produced by the fixed roadside member.

But, while the officers of the Lackawanna are willing to encourage the development of devices of promising merit, they are not willing to encourage strangers having money to invest, to put their money into untested inventions, and they object, therefore, to the way in which the International Company has advertised its doings. The following letter is from G. J. Ray, chief engineer of the Delaware, Lackawanna & Western.

"The attention of the management of this company has been called to a bulletin, No. 16, issued under date of December 9, 1912, by the International Signal Company, addressed to the stockholders of that company, the first paragraph of which reads:

"It gives us great pleasure to announce that the officials of the Delaware, Lackawanna & Western Railroad have closed an agreement with us to make such an installation of our new automatic train stop on that great system as will comply with the requirements of the Block Signal and Train Control Board of the Interstate Commerce Commission; and we are now hard at work getting new machines built to make this installation."

"The bulletin closes with an appeal to the stockholders to buy some of the treasury stock of the company, and attached to the sheet is a blank to be used in subscribing to the stock.

"The information contained in the paragraph quoted, as also throughout the entire circular, is grossly misleading as to the arrangement made with the D. L. & W. Railroad Company. Briefly stated, this arrangement is as follows:

"After an examination of the mechanism of their device, as shown in a model in the office of the signal company, this company on November 8 by letter authorized the signal company to install one of its signals on a branch line of our road, the mechanism for the test to be put on a single engine; this to be done solely at the expense of the signal company, the railway company's officials and employees to render the necessary assistance in making the installation and in conducting tests. Up to this date (December 18) the apparatus for this single signal has not been furnished, we being advised that the signal company is busy in its shops making up parts for the apparatus and does not expect to have it completed ready for installation before January 1.

"This information is given to the public as, from inquiries our company has had from different sources, it is evident the signal company is securing subscriptions of stock from railway employees based on the misrepresentations contained in the bulletin above referred to."

NEW SECURITIES AND DIVIDEND CHANGES.

A Record of the Financing That Has Been Arranged for and of the Extra Dividends and Changes in Dividend Rates.

There was an unusually small volume of new financing during 1912, due to the fact that railroads in the United States, exclusive of Canada, had no large projects for extensions and did not find it expedient to issue any large amount of securities for betterment work. It is a rather striking fact that neither the Pennsylvania Railroad nor the Pennsylvania Lines West issued or sold any new securities with the exception of the P. R. R. car trust certificates shown in the accompanying table. The New York Central & Hudson River still has its New York terminal to complete, and this company issued \$20,000,000 4½ per cent. notes and \$9,000,000 debenture bonds. The New York, New Haven & Hartford had \$33,400,000 notes falling due, which it financed through the issue of \$40,000,000 one-year 5 per cent. notes, and also issued \$30,000,000 one-year 4 per cent. notes to provide additional funds for capital expenditures. The New Haven still has its electrification to complete to New Haven and has been spending large sums on this account during the past year. The large issues, therefore, for capital expenditures that were not simply a refinancing of securities falling due were the New Haven's note issue already issued, the Chicago & North Western's \$15,000,000 Milwaukee, Sparta & Northwestern 4's, the Chicago, Rock Island & Pacific's debenture bonds, the Erie's collateral gold bonds, the Illinois Central's 4½ per cent. notes, the New York Central's 4½ per cent. notes, the Norfolk & Western's \$13,330,000 convertible bonds, the St. Louis & San Francisco's N. O. T. & M. \$11,541,000 bonds, and the Western Maryland's \$10,000,000 5 per cent. notes.

In Canada the case is quite different. The Canadian Pacific made arrangements for the sale of large amounts of new securities and the Grand Trunk continued to issue large amounts of new securities. The Canadian Northern also raised large amounts of capital, but authoritative figures for use in our table are not available and therefore the company's name is omitted.

There were 23 roads that raised their dividends during the year or paid dividends where they had not been paying dividends before. The most important roads that reduced their dividends were the Colorado & Southern, the New York, Ontario & Western and the Toledo, St. Louis & Western. It will be noticed that a number of roads paying higher dividends in 1912 than in 1911 were small roads which had previously accumulated a surplus, but which had refrained from paying a dividend until they thought they could see better times ahead. The change in the

Reading Company's dividend has been often rumored before and took place after the decision of the Supreme Court finding that the anthracite roads were not engaged in illegal conspiracy in restraint of trade. In the case of both the Southern Railway preferred and the Buffalo, Rochester & Pittsburgh, dividends were raised after a considerable period of waiting for the roads to demonstrate quite clearly their earning power.

DIVIDEND CHANGES IN 1912.

Name of Company.	Dividend Declared in 1912. Per Cent.	Present Annual Rate. Per Cent.	Month.	Annual Rate in 1911. Per Cent.
Barre R. R.	5	5	April	6
Belt & Stock Yards	5	5	.....	*53
Buff., Roch. & Pittsb., common	5½	6	August	5
Cement, Toleras & Tidewater	6	6	.....	0
Central of Georgia	†3	..	.....	..
Cin., New Orleans & Tex. Pacific	10½	8	.....	8
Cincinnati Northern	..	..	.....	..
Colorado & Southern	1	1	December	2
Cornwall & Lebanon	10	10	.....	0
Cripple Creek	2	4	.....	0
Detroit & Toledo Shore Line	14	8	May	8
Grand Trunk Ry. of Can., 3d pfd	1½	1½	.....	½ of 1
Green Bay & Western	..	..	.....	..
Hocking Valley	7½	7	June	15
International & Great Nor.	5	5	July & Nov.	0
Louisiana Western	10	..	June	0
Mason City & Clear Lake	10	..	June	0
Mexican Ry., ordinary stock	25½	37½	October	1½
Mississippi River & Bonne Terre	5½	8	.....	6
Montpelier & Wells River	5	5	July	5½
Mount Washington	0	..	March	4
New Orleans & Northeastern	5	5	.....	6½
N. Y., Ont. & West., common	0	..	July	2
Northwestern R. R. of S. C.	6	6	.....	0
Pittsburgh & Lake Erie	..	..	.....	..
Pittsb., Chartiers & Youghiogeny	10	6	November	0
Reading Co.	6½	8	.....	6
St. Louis, I. M. & Southern	4	4	.....	0
St. Louis, R. M. & Pacific	2½	..	.....	0
St. Louis Southwestern	5	5	.....	4
Sandy River & Rangely Lakes	5	5	April	4
Southern Ry.	4½	5	September	2
Staten Island Rapid Transit	10	10	October	8
Susquehanna & New York	2	2	November	0
Texas Central, common	5	5	June	0
Tionesta Valley	10	10	November	0
Toledo, St. Louis & Western	0	..	.....	4
Tonopah & Goldfield—	..	..	.....	..
Preferred	7	..	October	0
Common	3	..	October	0
Warren & Ouachita Valley	10	7	.....	14
York & Beach	3	3	December	2

* 3 per cent. in cash and 50 per cent. in stock paid in 1911.

† This is the initial dividend on the new preferred stock.

‡ The rate was changed in 1911 from 4 per cent. annually to 6 per cent. and, as will be noticed, was again changed in 1912.

§ 1½ per cent. was paid in January, 2 in April, 1¼ in July and 1¼ in October.

¶ No fixed annual rate.

Name of company.	Kind of security issued.	Amount sold.	Amount of refunding covered.	Month in which sold.
Algoma Central Terminal	Mortgage bonds	\$160,000	None	December
Algoma Central Terminal	Common stock	(\$800,000)	None	December
Algoma Eastern Terminal	Mortgage bonds	\$100,000	None	December
Algoma Eastern Terminal	Common stock	900,000	None	December
Anderson & Saline River	Common stock	100,000	None	December
Atlanta, Birm. & Atlantic, Georgia Terminal	Receiver's certificates	\$56,000	None	.....
Bangor & Aroostook	Consolidated refunding 4 per cent. bonds	4,500,000	\$3,465,300	July & Nov.
Beaumont, Sour Lake & Western	First mortgage 6 per cent. bonds	1,210,000	None	May
Bessemer & Lake Erie	Equipment notes	a 151,722	.....	.....
Birmingham & Southeastern	First mortgage 6 per cent. bonds	600,000	.....	Various
Birmingham & Southeastern	Common stock	236,000	None	Various
Boston & Albany	b Improvement 4½ per cent. bonds	335,000	None	June
Buffalo & Susquehanna	Receiver's certificates	1,000,000	None	July
Buffalo & Susquehanna	Receiver's certificates	500,000	\$500,000	July
Buffalo Creek R. R.	First refunding mortgage 5 per cent. bonds	500,000	500,000	December
Buffalo, Rochester & Pittsburgh	*Equipment 4 per cent. bonds, Series G	1,000,000	.....	March
Buffalo, Rochester & Pittsburgh	Convertible 4½ per cent. bonds	1,233,000	None	Jan., June & Oct.
California, Arizona & Santa Fe	c Cal.-Ariz. lines 1st and refund. mtge. 4½ per cent. bonds	1,123,000	None	Sept., Nov. & Dec.
Cambria & Indiana	Car trust Series B 5 per cent. bonds	18,299,695	None	March
Canadian Pacific	Debenture stock	220,000	None	February
Canadian Pacific	Preferred 4 per cent. stock	\$2,252,516	.....	.....
Canadian Pacific	Ordinary stock	(\$11,262,580)	.....	.....
Canadian Pacific	Common stock	\$1,976,390	.....	.....
Carolina, Clinchfield & Ohio	Equipment trust bonds, Series C	(\$9,881,950)	.....	.....
Carolina, Clinchfield & Ohio	Common stock	\$18,000,000	.....	.....
Cement, Toleras & Tidewater	Common stock	10,000,000	\$10,000,000	July
Central New England	First mortgage 50-year bonds	1,000,000	None	August
Central New England	First mortgage 50-year bonds	266,000	.....	.....
Central of Georgia	Cumulative 6 per cent. preferred stock	d 63,000,000	d 63,000,000	April
Chesapeake & Ohio	Gold 4½ per cent. notes	e 2,000,000	e 2,000,000	October
Chesapeake & Ohio	General mortgage 4½ per cent. bonds	f 14,450,000	f 14,450,000	July
Chicago, Burlington & Quincy	General mortgage 4 per cent. bonds of 1958	5,546,000	4,366,000	Various
Chicago & Eastern Illinois	Refunding and improvement 4½ per cent. bonds	374,000	.....	.....
Chicago & Eastern Illinois	Purchase money first lien 5 per cent. coal bonds	1,877,000	\$1,877,000	.....
Chicago & Eastern Illinois	General consolidated and first mortgage 5 per cent. bonds	g 1,110,000	899,000	.....
Chicago, Indianapolis & Louisville	Refunding mortgage 5 per cent. bonds, Series B	5,031,000	.....	February
Chicago & North Western	Milwaukee, Sparta & No.-West. 1st mtge. 4 per cent. bonds	1,230,000	27,000	January
Chicago, Rock Island & Gulf	Stock	1,558,000	None	.....
Chicago, Rock Island & Gulf	Mortgage bonds	15,000,000	None	March
Chicago, Rock Island & Gulf	Mortgage bonds	72,000	None	November
Chicago, Rock Island & Gulf	Mortgage bonds	1,193,000	None	November

Name of company.	Kind of security issued.	Amount sold.	Amount of refund- ing covered.	Month in which sold.
Chicago, Rock Island & Pacific.....	First and refunding mortgage bonds.....	3,500,000	None	January
Chicago, Rock Island & Pacific.....	Debenture bonds.....	20,000,000	None	January
Chicago, Rock Island & Pacific.....	First and refunding mortgage bonds.....	h 1,494,000	.....	.....
Chicago, Rock Island & Pacific.....	Equipment notes.....	5,100,000	.....	.....
Chicago, St. Paul, Minneapolis & Omaha.....	Debenture 5 per cent. bonds.....	5,000,000	None	March
Cincinnati, Hamilton & Dayton.....	General mortgage 4½ per cent. bonds.....	43,000	\$43,000	.....
Cincinnati Nashville Southern.....	First mortgage bonds.....	150,000	None	October
Cincinnati Nashville Southern.....	Stock.....	25,000	.....	.....
Cleveland, Cincinnati, Chicago & St. Louis.....	General mortgage 4 per cent. bonds.....	1,578,000	.....	.....
Coal & Coke Railway.....	First mortgage 5 per cent. bonds.....	11,000	None	July
Des Moines Western.....	Common stock.....	85,000	None	August
Erie.....	Collateral gold notes.....	10,000,000	None	April
Erie.....	Equipment trust certificates.....	2,160,000	None	June
Fairport, Painesville & Eastern.....	Common stock.....	31,000	.....	Jan. & April
Florida, Alabama & Gulf.....	Gold 6 per cent. bonds.....	i 500,000	.....	.....
Florida East Coast.....	First mortgage bonds.....	1,000,000	.....	January
Fort Worth & Rio Grande.....	First mortgage 4 per cent. bonds.....	j 17,000	.....	.....
Galveston, Harrisburg & San Antonio.....	First mortgage 5 per cent. bonds.....	1,518,000	None	June
Georgia & Florida.....	General mortgage bonds.....	2,000,000	None	March
Gettysburg & Harrisburg.....	First consolidated mortgage 5 per cent. bonds.....	250,000	\$250,000	October
Grand Junction & Grand River Valley.....	First mortgage 5 per cent. bonds.....	64,000	None	Jan., Mar. & June
Grand Trunk.....	Perpetual 4 per cent. debenture stock.....	10,727,311	.....	Various
Grand Trunk.....	Guaranteed 4 per cent. stock.....	1,825,000	.....	Various
Greenville & Knoxville.....	First mortgage bonds.....	460,000	325,000	June
Hawkinsville & Western.....	First mortgage 30 year 5 per cent. bonds.....	200,000	.....	January
Hillsboro & Northeastern.....	Common stock.....	75,000	None	Various
Idaho & Washington Northern.....	Convertible notes.....	729,000	None	April
Illinois Central.....	Secured gold 4½ per cent. notes, due 1914.....	15,000,000	None	July
Illinois Southern.....	First mortgage 5 per cent. bonds.....	69,000	None	May
Kansas City Southern.....	Refunding and improvement mortgage bonds.....	1,000,000	.....	November
Kanawha & Michigan.....	Equipment trust 4½ per cent. notes.....	1,200,000	.....	July
Louisville & Nashville.....	Common stock.....	12,000,000	.....	k November
Louisville, Henderson & St. Louis.....	Equipment trust bonds.....	300,000	.....	November
Maine Central.....	Common stock.....	4,984,300	\$15,484,000	{ September March
Maine Central.....	1-year coupon notes.....	12,000,000		
Manufacturers Railway of St. Louis.....	Common stock.....	833,000	.....	August
Marshall & East Texas.....	First mortgage 5 per cent. bonds.....	1,154,000	None	January
Marshall & East Texas.....	First mortgage 5 per cent. bonds.....	26,000	.....	June
Mason City & Clear Lake.....	General mortgage bonds.....	330,000	\$225,000	June
Minneapolis & St. Louis.....	.....	.....	.....	.....
Minneapolis, St. Paul & Sault Ste. Marie.....	First mortgage 4 per cent. consolidated bonds.....	1,520,000	None	January
Minneapolis, St. Paul & Sault Ste. Marie.....	Equipment gold 4½ per cent. notes.....	1,020,000	None	June
Missouri, Kansas & Texas.....	2-year 5 per cent. notes.....	750,000	.....	January
Missouri, Kansas & Texas.....	2-year 5 per cent. notes.....	1,650,000	.....	May
Missouri, Kansas & Texas.....	1-year 5 per cent. notes.....	1,500,000	m	July
Missouri Pacific.....	Three-year secured notes.....	5,000,000	.....	April
Mobile & Ohio.....	Collateral trust bonds.....	78,000	\$78,000	.....
Montreal Southern Counties.....	Common stock.....	n 935,000	None	.....
New York Central & Hudson River.....	30-year debenture 4 per cent. bonds.....	9,006,000	None	Various
New York Central & Hudson River.....	3-year gold 4½ per cent. notes.....	20,000,000	None	Various
New York, New Haven & Hartford.....	Stock.....	o 707,900	\$1,061,850	Various
New York, New Haven & Hartford.....	1-year 4 per cent. notes.....	30,000,000	.....	January
New York, New Haven & Hartford.....	1-year 4½ per cent. notes.....	220,000	.....	January
New York, New Haven & Hartford.....	1-year 4½ per cent. notes.....	3,275,000	.....	July
New York, New Haven & Hartford.....	1-year 5 per cent. notes.....	40,000,000	\$33,400,000	December
Norfolk & Western.....	Convertible 10-20-year 4 per cent. bonds.....	13,330,100	None	March
Northern Maine Seaport.....	Main line 5 per cent. bonds.....	14,000	None	June
Otsego & Herkimer.....	Common stock.....	500,000	.....	.....
Pennsylvania Railroad.....	Car trust certificates.....	6,000,000	.....	Various
Pittsburgh & Lake Erie.....	Common stock.....	4,788,000	.....	March
Portland Terminal Co.....	Common stock.....	500,000	None	April
Portland Terminal Co.....	First mortgage bonds.....	4,500,000	None	Sept. & Nov.
Raleigh, Charlotte & Southern.....	Common stock.....	125,000	.....	February
Reading & Columbia.....	First consolidated mortgage bonds.....	850,000	\$850,000	March & Sept.
Reading & Columbia.....	Debentures.....	150,000	150,000	.....
Rockingham Railroad.....	30-year 5 per cent. bonds.....	250,000	.....	.....
Rockingham Railroad.....	Common stock.....	72,000	.....	.....
St. Louis & San Francisco.....	2-year 6 per cent. secured notes.....	2,600,000	None	Sept. & Oct.
St. Louis & San Francisco.....	Refunding mortgage 4 per cent. bonds.....	334,000	None	June
St. Louis & San Francisco.....	General lien mortgage bonds.....	3,000,000	None	March
St. Louis & San Francisco.....	New Orleans, Tex. & Mex. division first mortgage bonds.....	11,541,000	None	April & June
St. Louis, Brownsville & Mexico.....	First mortgage 6 per cent. bonds.....	p 295,542	None	.....
St. Louis Southwestern.....	First terminal and unifying mortgage bonds.....	7,500,000	\$2,165,000	January
St. Louis Southwestern.....	First terminal and unifying mortgage bonds.....	656,000	None	September
Sandy River & Rangely Lakes.....	Common stock.....	58,400	None	Apr., Aug. & Oct.
Savannah & Southern.....	Common stock.....	150,000	None	May
Southern Railway.....	First consolidated mortgage bonds.....	35,000,000	\$35,000,000	q
Southern Railway.....	Development and general mortgage 4 per cent. bonds.....	r 5,630,000	.....	.....
Southern Railway.....	Equipment trust 4½ per cent. certificates, Series Q.....	1,500,000	.....	.....
Stephenville, North & South Texas.....	First mortgage bonds.....	2,423,000	\$658,500	February
Tallah Falls.....	First mortgage 5 per cent. bonds.....	s 65,000	.....	.....
Texas & Pacific.....	Equipment trust certificates.....	600,000	None	June
Washington Terminal.....	Common stock.....	130,000	None	October
Washington Western.....	Common stock.....	250,000	None	August
Western Maryland.....	3½-year 5 per cent. gold notes.....	10,000,000	None	March & Sept.
Wisconsin Central.....	First and refunding mortgage bonds.....	1,520,000	None	January

a Issued during the year but not sold.

b Guaranteed principal and interest by the New York Central & Hudson River.

* Guaranteed by the Buffalo, Rochester & Pittsburgh.

c Pledged under Atchison, Topeka & Santa Fe bonds.

d These bonds were not sold but were issued in exchange for a like amount of Dutchess County Railroad first mortgage bonds, due June 1, 1940.

e These bonds were not sold but were issued in exchange for a like amount of Central New England general mortgage 5 per cent. income bonds, due February 1, 1949.

f The income bonds retired through the sale of this \$15,000,000 new preferred stock cost \$15,170,109, and there was retired in addition \$116,050 income bonds through the use of other funds, leaving outstanding \$433,950 total first, second and third income bonds.

g These bonds were not sold but were issued to retire the bonds shown as having been refunded.

h Issued but held in the treasury and not sold.

i A portion of these notes are held to pay for completion of the road.

j These bonds were issued but not sold.

k Offered to stockholders in November and will be issued and dated February 10, 1913.

l On December 18, 1911, stockholders of this company approved the purchase and voted for that purchase \$9,370,200 common stock, \$1,917,500 preferred stock and \$2,500,000 refunding and extension mortgage 5 per cent. bonds. Although the actual change of securities took place in 1912, the arrangements were made in 1911 and are therefore not included in the above table.

m Proceeds partly used to pay off \$1,100,000 5 per cent. notes due July 1, 1912.

n Issued. Amount sold is not given.

o This is the par value of 7,079 shares of stock issued in exchange for 3½ per cent. convertible debenture bonds of a par value shown under the amount of refunding covered.

p These bonds were issued during 1912 but were not sold.

q The consolidated mortgage bonds were issued to acquire a like amount of underlying first mortgage 6 per cent. bonds.

r Issued for improvements, new equipment, etc., but not sold.

s Delivered to the Southern Railway for advances made to the Tallulah Falls.

CHANGES IN OWNERSHIP AND CONTROL.

The loss of control of the Kansas City, Mexico & Orient by E. A. Stilwell, and the loss of control of the Denver, North-western & Pacific by the D. H. Moffat estate, are two events that are commented on editorially in this issue. There were no other important changes in ownership and control during the year 1912 with the exception of a change which has taken place in the personnel of the board of directors of the Seaboard Air Line. This change, however, did not take place in 1912 exclusively, but has been going on ever since the road went into the hands of a receiver. John Skelton Williams, of Baltimore, who was influential in the Seaboard Air Line before the reorganization, has withdrawn largely from participation in this road's affairs. The bankers who formed a syndicate to take care of the reorganization of the property have now shared the control of the property with others, and the road has been put in charge of an operating president, W. J. Harahan; William Meldrum, of the firm of Blair & Company, New York, having retired. A larger representation of local interests has been accorded on the board of directors, and it is expected that the road will have more local autonomy.

The Gould lines have shown a policy of greater co-operation. B. F. Bush, who was made president of the Missouri Pacific, has also been made president of the Denver & Rio Grande and the Western Pacific.

There is one important change that is foreshadowed by the events of 1912, but has not yet taken place. This is the separation of the Union Pacific and the Southern Pacific. The possible effects of the Supreme Court's decision in regard to this merger are discussed in the comments on the Union Pacific annual report.

The principal changes which have taken place and which are given in the following list are not all actual changes of control. Some of them are simply changes of names of railways, and in many cases are nominal changes where, for instance, a subsidiary has been merged with a parent company.

The Atlantic & Western, which is a 10-mile road crossing the Seaboard Air Line, the Southern Railway and the Atlantic Coast Line, has been bought by Middendorf, Williams & Company, of Baltimore.

The Tallassee & Montgomery has been bought by the Birmingham & Southeastern.

The Rutland, the sale of which was arranged for in 1911, has not yet been taken over by the New York, New Haven & Hartford, but in the latter part of 1912 the Supreme Court of New York refused to make permanent an injunction against the sale by the New York Central & Hudson River of control of this company to the New York, New Haven & Hartford, and held that the New Haven and the Rutland were not competing roads.

The Tampa Northern has been bought by the Seaboard Air Line.

The Bridgton & Saco River has been bought by the Maine Central.

The Burr's Ferry, Brownell & Chester has been bought by the Southern Pacific.

The Beaumont & Great Northern has been bought by the Missouri, Kansas & Texas.

The Alberta Railway has been bought by the Canadian Pacific.

The Nevada & California has been sold by the Southern Pacific to the Central Pacific. This road is 480 miles long, and runs from Hazen, Nev., to Mojave, Cal. While the Central Pacific is controlled by the Southern Pacific, the change in ownership of the Nevada & California is worth noting, because of the fact that the Supreme Court, in its decision holding the Union Pacific-Southern Pacific merger illegal, mentioned the fact that the Union Pacific could have bought the Central Pacific, if it could have gotten it, without violating the law.

General News.

The freight house of the Chicago, Indiana & Southern, at Kankakee, Ill., was destroyed by fire on December 21.

R. G. Garros, the French aviator, who recently soared to a height of 19,032 ft. at Tunis, made a flight on December 18 from Tunis to Sicily, across the Mediterranean Sea, 160 miles; and a few days later he flew from Sicily to Italy, about the same distance.

A report from Westmount, Que., says that a carrier pigeon recently liberated at that place made its way back to its home in England in twelve days. It is assumed that, doubtless, the bird alighted on one or more vessels in the course of its flight across the Atlantic.

The St. Louis & San Francisco has announced that prizes of \$10, \$5 and \$2.50 will be awarded in a competition, open to all women in the families of Frisco employees, for the best letter on "Safety First." The letters are not to exceed 250 words in length.

On its principal through passenger trains the Wabash will henceforth have all-steel cars. Ten entirely new steel trains are being put in service on the limited schedules between Chicago and St. Louis, St. Louis and Kansas City, and St. Louis and Detroit.

A fire in a lumber shed of the Wason Manufacturing Company at Brightwood, Springfield, Mass., on the evening of December 19, spread to a woodworking shop adjacent, and destroyed altogether property amounting to about \$300,000, including 2,750,000 ft. of lumber.

The Chicago, Burlington & Quincy has made a settlement with its telegraph operators by which a large number of increases in pay are granted in individual cases, according to individual conditions, without a general increase in the scale.

The Pullman Company has increased the pay of 2,500 office employees at percentages varying from 6 to 12, the lower grades receiving 12 per cent. increase. The order takes effect January 1.

The Chicago & Alton "Hummer" bound from Chicago to Kansas City, was stopped three miles south of Springfield, Ill., on the night of December 23, by four robbers, but their efforts to dynamite the safe and the express car failed, and the men escaped. They are supposed to have boarded the train while it was passing through Springfield slowly. The engine and express car were uncoupled from the rest of the train and moved forward about two miles.

Representative Raker has introduced in the lower House of Congress a bill (H. R. 27016) to require interstate railroads generally to equip locomotives with headlights of not less than 1,500 c. p., measured without the aid of a reflector. The law does not apply if the headlight equipment shall fail on a trip, provided it be shown that it was in good order when the trip was begun. The penalty for the violation of the law is from \$100 to \$1,000, and every day is a separate offense.

The Merchants' Despatch Transportation Company announces that all of its refrigerator cars—which means all of the cars owned by the company—have been sold to the New York Central and to the Lake Shore. The cars will be relettered, as fast as possible, to show the new ownership. The statement in the *Equipment Register* shows 6,388 M. D. T. refrigerator cars, of which 160 are assigned to the service of the American Express Company, and are equipped to be run in passenger trains.

C. C. Elwell, engineer of the Connecticut Public Utilities Commission, reporting on the derailment at Milford November 16, says that it was due to a defective spring frog. Parts of the frog had become loosened and the base plate broken. He says that the fact that the base plate was broken should have been discovered by the section foreman. He recommends that in addition to frequent examinations of frogs and switches, that competent supervisors also inspect the tracks, and that their reports be kept on file.

The St. Louis & San Francisco, as a further extension of its plan for giving increased authority to station agents, has

appointed general agents at six prominent places, in addition to the local agents. The general agents will have charge of both operating and traffic matters, and report direct to the superintendent. The six cities named in the order, which is signed by J. A. Middleton, freight traffic manager, and W. T. Tyler, general manager, are Wichita, Tulsa, Oklahoma City, Fort Smith, Joplin and Cape Girardeau.

The principal railroads centering in New York City have appointed a committee to confer with officers of the city in relation to a proposed freight railroad on the east side of the harbor, extending from the Brooklyn Bridge south along the shore to Sixty-fifth street, Bay Ridge, where a connection can be made with freight tracks of the Long Island Railroad. A part of this water-front territory is already occupied by freight tracks. The committee of railroad officers consists of Ralph Peters, president of the Long Island; J. C. Stuart, vice-president of the Erie, and W. G. Besler, vice-president of the Central of New Jersey.

A Correction.

In printing a part of the Hon. W. L. Mackenzie King's address before the Railway Business Association, an error was made, and the name was given as W. L. Mackenzie, it should of course have been W. L. Mackenzie King.

Post Office Department's "Economies."

The annual deficit of the Post Office Department has been reduced only by cutting down the amount paid to the railroads for hauling mail. This comes out in a statement issued by the Committee on Railway Mail Pay.

During the ten years from 1901 to 1911 the department took up an enormous increase in business at a greatly decreased cost for railway transportation and at a largely increased cost for other purposes. It cost the department, for purposes other than railway transportation, nearly nine-tenths of \$126,248,630 to add that amount to its gross receipts (although for these other purposes it had previously spent less than seven-tenths of its gross receipts) while it required less than one-tenth of the same sum to pay for the added railway transportation that the new business required, although at the beginning of the period railway transportation had cost more than one-third of the gross receipts. This startling comparison, says the committee, fully warrants the conclusion that the power of congress and the department has been exercised to force upon the railways, by reducing the payments for their services, the burden not only of the effort to eliminate the annual postal deficit, but of considerable increases in other forms of postal expenditure. No reference to rural free delivery will serve to explain away the conclusion suggested by this comparison, especially since only a fraction of the cost of that service represents really an additional net outlay. This service has permitted a reduction of one-third in the number of post offices and has been in many cases substituted for star route service, and the savings thus permitted ought to be credited to it before determining its cost.

Reduced Fares to the Orient.

The Nippon Yusen Kaisha, the Japanese steamship line connecting at Tacoma and at Seattle with the Great Northern, has reduced passenger rates from Puget Sound to ports in the Orient. The first-class rate to Yokohama will be cut from \$125 to \$110, to Kobe from \$127.50 to \$110, to Shanghai from \$140 to \$125, and to Hong Kong from \$150 to \$125. Important reductions will be made in first-class round-trip rates. The time limit for return has been increased from four to six months. First-class round-trip round-the-world fare is reduced from \$525 to \$510.

A Railway Document of a New Brand.

"Employees of the Missouri Pacific at the headquarters of the road in St. Louis have sent to Miss Helen Gould the following telegram of congratulation on the announcement of her engagement to Finley J. Shepard:

"You are very dear to the hearts of the Missouri Pacific employees, and hence the announcement that you are soon to become the wife of one of our number, a model man, whom we

esteem most highly, is exceedingly gratifying to each one of us. Please be assured that the sincere, cordial wishes for a blissful future go to you."

Report on Collision at Alexandria, La.

In the rear collision at Alexandria, La., on the Texas & Pacific, November 23, (reported in the *Railway Age Gazette* December 20, page 1192) three persons were killed and three injured. The State Railroad Commission of Louisiana, in circular No. 395, has made a report on this collision, from which it appears that the two engines, without trains, which came up behind the freight and pushed it to Alexandria, had helped the freight all the way from Moreland, eight miles east of Alexandria; and the commission says that the men in charge of the rear one of the two engines should have left a flagman at Moreland. The passenger train following was running on the same schedule as these engines, being the third section of No. 51. The commission finds also that the dispatcher was negligent in failing to notify the passenger that he had authorized the engines ahead of it to run on a freight schedule, 18 miles an hour, from Moreland; the passenger schedule being 40 miles an hour. There were three telegraph offices where this information might have been given. Continuing, the commissioners use the following vigorous language:

"The company's rule No. 99, which is the rule governing the protection of trains stopped under unusual circumstances, is obsolete, lax and crude. It leaves to the flagman and conductor entirely too much discretion and does not prescribe their specific duties and is not a safe rule. The flagmen who were examined showed little or no knowledge of the rules, and each one placed a different interpretation upon them. Both the flagman of second 51 and the flagman of third 51, the fast passenger train, had entered the service without examination, and neither one knew much about the rules. The flagman of second 51 had spent two hours in the instruction car. The flagman on the passenger train had had no instruction * * *. The company's lack of discipline is surprising in a modern railroad. Untrained men are placed in responsible positions without even a preliminary examination. * * *. An approved block signal system should be installed as soon as practicable."

Four Thousand Shippers Favor Conservative Regulation.

Names have been made public by the Railway Business Association, of 4,000 shippers and receivers of freight scattered through nearly all the states, who declare in favor of a policy which will permit the railways "adequate revenue to meet existing obligations and to attract capital for necessary improvements and extensions." The list of signatures accompanies the annual report of the general executive committee, who ask whether the time has not come for the Interstate Commerce Commission to put such a policy into effect. The committee says:

Some newspapers have interpreted this declaration by shippers as intended to prepare the public for some general advance in freight rates. This is a misunderstanding. These shippers have not been asked to say anything about such an advance. The Association does not know that any advance is under consideration. No railway manager heard of this declaration until it was in the mails. We would not express an opinion upon particular schedules if filed. What these shippers urge is all comprised in the declaration which they have signed:

"The undersigned, in our own interest, respectfully urge a policy toward railways which, while emphasizing the necessity for their regulation to prevent discrimination and excessive charges; to safeguard life and to promote the convenience and comfort of the public, will give careful heed to the promotion of their prosperity and growth; ascertain in considering enactments compelling expenditures that they possess the resources to meet such outlays without injury to efficient service; provide that in all adjustments of rates adequate revenue shall be insured them to meet existing obligations and to attract capital for necessary improvements and extensions."

The press reflects the same apprehension editorially. The increase in eastern engineers' wages, followed by petitions from other employees, is an additional reason for anxiety that railway credit be conserved. . . . Under private ownership the government cannot by law compel a railroad company to enlarge a terminal or buy locomotives and cars if it has not got the money, and it cannot compel investors to arbitrate whether they shall furnish the money.

Statistics for the fiscal year ending June 30, 1912, compared with 1910—both bumper years—show a decrease of net operating income of \$462 per mile of line, or 12 per cent. That is, while enjoying larger receipts these roads had left per mile of road 12 per cent. less in 1912 than in 1910 available for interest on debt, for improvements out of earnings, and for dividends and surplus upon which to base credit in selling securities. . . . Chairman Prouty, in his address to the National Association of Railway Commissioners, said:

"We can make rates reasonable, we can put on schedules for the running of trains; but can we obtain the new money which is necessary to develop our old railroad systems and to build new?" The commission has said that it will act for the strengthening of railway credit if expenses should so increase as to convince them that the time has come. These shippers' signatures may well suggest to the commission that the hour has struck for formulating such a policy. A clear perception of our problem demands that now even more than in time of depression we do our utmost to make this period of business prosperity a time not of "fair average return" to the railways, but of liberal earnings and substantial upbuilding of surplus with which when lean months come the roads may operate efficiently, maintain upkeep and accomplish for each year that year's fair quota of additions and extensions.

Firemen's Wages.

The conference between the representatives of the railroads and the leaders of the firemen's brotherhood, which has been held in New York City, has been adjourned to January 6. Elisha Lee, representing the railroad companies, in his last communication to Mr. Carter, of the firemen, reiterated the objection of the roads to the requests of the brotherhood for two firemen on every engine of certain classes, while at the same time recognizing that no employee should be expected or permitted to perform service which would require excessive physical effort. The varying conditions, such as mechanical stokers, superheaters, keeping coal within reach, class of train, length of runs, hours of duty, etc., make it impracticable to formulate a just and equitable rule for general application. Mr. Lee suggested that possibly there should be a permanent committee to decide questions as to when a fireman needs assistance. The roads hold that the precedent established by the recent arbitration of the enginemen's wages should afford a reasonable and satisfactory ground for the settlement of the firemen's wages. Mr. Lee estimates that the latest demands of the firemen are such as to increase the firemen's payrolls 35 per cent. While again declaring that arbitration ought not to be necessary, Mr. Lee says that if that course is taken it should be done in the way that was followed in the case of the enginemen, and not according to the terms of the Erdman act. The firemen favor the Erdman act procedure, as the terms of that law provide for a time limit within which arbitrators must make their decision.

New York State Report on New Haven Tracks.

The New York State Public Service Commission, Second district, has sent the following letter to Vice-President E. H. McHenry of the New York, New Haven & Hartford:

"Dear Sir:—Owing to the recent criticisms of the tracks of your company, this commission has felt it desirable to have a minute inspection made by its engineers, without advising you or your subordinates, and the report of such inspection by C. R. Vanneman, chief of the division of transportation, dated December 9, is enclosed.

"This inspection was made to discover every defect in each of your tracks within the territory named. The men walked each track, and examined minutely each point where doubt existed. The inspection was therefore much more detailed than is usually made either by railroad officers or by state inspectors.

"You will note that the principal defects found were in the chestnut ties, which were laid in the track about the year 1908. Approximately 750 of these ties were found to be bad, out of about 150,000, or practically $\frac{1}{2}$ of 1 per cent. As these ties were scattered in the track, and were practically all on a straight line, they did not occasion a dangerous condition at any spot, and the amount of renewals which your company contemplates making will cover much more than the number of seriously defective ties which were found. In fact, our inspectors noticed that many ties were being renewed which, in their judgment, would last at least another year.

"Certain defects in rails were observed which are embodied in the report, and we feel that some of these rails should have been discovered and removed earlier by the section men.

"You will note that it is the opinion of the inspectors that your tracks are in safe condition, and that the standards of construction and material are of a high order; but it is thought that the tie renewals should have been made earlier, and that considerable improvement is possible in the detailed supervision of the maintenance work.

"The report of the inspection, September 13, by Inspector Eggleston has been studied. Considering the difference in the conditions of inspection, the first one having been made in the usual way from an inspection car, and the last one on foot, we do not think the reports inconsistent, and our inspectors believe that the statement made at the conclusion of the report of September 13 may be fairly repeated, 'that the property is being maintained in a conservative and careful manner.'

"Our examination further shows that your track renewals are being made in accordance with the best standards of track design which are used in this state. The principal elements of this construction are: Rail, 100 lbs. per yard, open hearth steel; ties creosoted and of ample section; rail fastenings, screw spikes and shoulder tie plates; ballast, stone; drainage, good.

"The practice above outlined has been applied, as our inspection reports show, since 1909. We believe that this affords a thoroughly safe construction, and we can suggest no improvement in those track standards."

Mr. McHenry in his reply said, in part:

"Instructions have been issued to correct all of the defects noted by the inspectors, and the recommendations will receive complete and literal compliance. The * * * ties for renewals were ordered in sufficient season and the deliveries were made not more than thirty days later than the time stipulated in the contract, but through some error on the part of the contractor the ties were improperly bored for the reception of screw spikes, and it was accordingly necessary to reject the entire lot, which correspondingly delayed the receipt of new ties in replacement. The conclusion of the commission in regard to the possible improvement in the detailed supervision of maintenance work will receive prompt attention."

Pension Plan for Frisco Lines.

President B. L. Winchell, of the St. Louis & San Francisco, has issued a circular announcing a pension plan for the St. Louis & San Francisco, the Ft. Worth & Rio Grande, the St. Louis, San Francisco & Texas, and the Paris & Great Northern, as follows:

"It has been determined that a plan for granting pensions to employees of these companies, for superannuation or disability, following long service on these lines, shall be made effective from July 1, 1913. Details of the plan will be announced before that date. In the meantime, it is thought that this advance notice may bring encouragement to the employees as a whole, as well as comfort and holiday cheer to some of those who are approaching years of retirement." The circular is also "Heartily Approved" by B. F. Yoakum.

The Government and the Anthracite Coal Roads.

The decision of the Supreme Court of the United States, to the effect that in the suit of the government against the Reading and other anthracite coal carriers proof of a pooling arrangement had not been shown, was reported in the *Railway Age Gazette* last week, page 1178.

A press despatch of December 20 says that the attorney-general will now proceed to inquire more in detail into certain acts of these roads, which were not adjudicated by the Supreme Court, namely, the acquisition of the New York, Susquehanna & Western by the Erie in 1898; of the Central of New Jersey by the Reading in 1901, and of the Pennsylvania Coal Company by the Erie in 1899. It is thought that there may be sufficient grounds for a further attack on the roads in connection with these transactions.

The Interstate Commerce Commission, under date of December 23, has sent to the anthracite coal carrying railroads, and to the coal companies controlled by them, an order to be complied with before March 1, next, calling for complete information in regard to the rates, practices, rules and regulations of the companies, governing the transportation of anthracite

coal. Any company which is unable to furnish the matter called for must appear in Washington, January 20, and explain why and in what particulars it is unable to furnish the desired information. The order embraces a list of 58 questions, filling a dozen pages, and appended to it are a dozen large sample blanks showing the forms in which the information must be prepared. The commission calls for a complete history of each company, including the names of the 50 largest stockholders; maps of all tracks, statement of cost of road, full information as to cost of equipment, and especially concerning all facilities and fixtures for handling coal; a full statement of revenues and expenses for four years; statement of allowances made to coal shippers; revenues and expenses for the years 1880, 1890, 1900, 1905 and every year since 1907; average tractive power of locomotives for 17 years; shipments of coal for one month from each of ten companies named; total shipments of each kind of coal to each of the principal tidewater destinations and also to Albany; total shipments for one month from each colliery to each and every destination, and, finally, the selling prices of coal at the mines and at tidewater during the month of November for many years back.

Indictments of New England Railroad Officers.

In the United States court at New York City, December 23, the grand jury, reporting to Judge Hough, presented indictments of Presidents C. S. Mellen, of the New York, New Haven & Hartford, and E. J. Chamberlin, of the Grand Trunk, and Alfred W. Smithers, chairman of the directors of the Grand Trunk, for violation of the anti-trust law, the indictments being the result of the inquiry which has been going on in New York for the past two or three weeks. Messrs. Mellen and Chamberlin were arraigned, pleaded not guilty, and were held in \$10,000 bail each. The grand jury has now adjourned to January 7, and it is understood that the doings of the New Haven road will be further investigated. This inquiry has been conducted under the direction of Assistant United States Attorney Jesse C. Adkins.

The charges in the indictments are based on alleged restraint of trade in combining to prevent competition in New England by bringing about the cessation of construction work on the projected extensions of the Grand Trunk to Providence and to Boston. The report recites that there is a large volume of passenger and freight traffic between Providence, Worcester and other cities and towns on the proposed new lines of the Grand Trunk, and Montreal, Chicago, Milwaukee and other western cities; and that on the completion of the proposed Grand Trunk extensions the New Haven would lose some of its traffic "but for the commission of the crime" set forth. It is stated that the sum which has been expended on the line from Palmer to Providence is \$2,000,000; that \$1,000,000 has been spent for the new steamboats, which were to be run by the Grand Trunk between Providence and New York, and that other obligations have been incurred by the Grand Trunk amounting to \$1,000,000.

Seven overt acts are charged as follows:

1. That Messrs. Mellen, Chamberlin and Smithers met in New York, August 5, 1912, and discussed a memorandum setting forth what each road proposed doing.

2. That Mr. Chamberlin on August 5 wrote to J. E. Dalrymple, his vice-president of the "long and satisfactory interview with Mr. Mellen," and that it had been agreed Mr. Dalrymple and Benjamin Campbell, vice-president of the New Haven, "should meet quietly at Mr. Mellen's office" to discuss divisions of business.

3 and 4. That the defendants met again in New York on September 20 and on October 1.

5. That on October 1 Mr. Mellen gave the G. T. people a revised and supplemental memorandum providing that the Grand Trunk retain "Central Vermont and existing controlled lines and continue its existing business as at present."

6. That Mr. Mellen on November 7 caused to be withdrawn a petition that had been filed with the Public Service Commission of New Hampshire asking authority to extend the B. & M. so as to compete with the Central Vermont.

7. That Mr. Chamberlin on November 9 caused discontinuance of work on the Southern New England.

It is charged that Messrs. Mellen, Chamberlin and Smithers "engaged and are now engaged in an unlawful combination to prevent the construction and completion of said extensions in

New England; to prevent the operation of said steamships between the cities of Providence and New York; to prevent the transportation of persons and property in interstate and foreign commerce over said lines of railroads and steamships, and that said defendants did thereby engage in an unlawful combination and conspiracy to restrain commerce among the states and with a foreign nation."

The three successive drafts of proposed agreements which were discussed, are published. In general they are of the same tenor as that given out by Mr. Mellen and noticed in the *Railway Age Gazette*, December 13, page 1153; but the first one contained a proposition that the G. T. sell the Central Vermont, and give the New Haven trackage rights into Montreal. All three provide for the retention by the Grand Trunk of its low tariffs (differential rates) between New England and the west. None of the proposed contracts was ever ratified. The final memorandum was as follows:

Grand Trunk—

To retain Central Vermont and existing controlled lines, and continue its existing business as at present.

To lease to Boston & Maine a joint and equal use of its line between Windsor and White River Junction.

To agree upon divisions upon joint business, based on interchange points at White River Junction, Montpelier and Rouses Point, the latter to be the junction for interchange business with the Rutland Railroad when the New Haven secures control of same. Messrs. Campbell and Dalrymple to be charged with the duty of arranging divisions referred to, and in event of disagreement to arbitrate.

To use Union Station, Portland, Me., if an arrangement for such use can be reasonably and economically made.

To lease joint and equal use of line between Swanton and Alburgh, Vermont.

New Haven—

To open all its territory to Grand Trunk and Central Vermont, via North Stratford, White River Junction, Montpelier, and Rouses Point and Portland.

To make lease of joint and equal use to Central Vermont of the Boston & Maine's line between Windsor and Brattleboro.

To run a through passenger train service between Montreal and New York, via White River Junction and Springfield.

To protect Grand Trunk in every way in its power in its present differential rate from New England points, and such new territory as it is proposed to open up to it hereby.

Comment.—The following editorial on the action of the Grand Jury is from the *New York Sun*:

... This indictment certainly starts toward the Supreme Court a question novel enough to engage the attention of the country and of the world. Federal power and constructive crime under the Sherman act are not yet fully defined. If Mr. Mellen is guilty of the crime of conspiracy, either Mr. Chamberlin or Mr. Smithers must be conspirators also under the Sherman law, for a man, even an unpopular railroad president of monopolistic proclivities, cannot very well be a conspirator all by himself. And if either Mr. Chamberlin or Mr. Smithers is a conspirator, guilty of criminal restraint of trade, the crime committed by the Canadian conspirator or conspirators presents a negative quality rather than a positive; that is, it consists of the omission or failure to construct certain railway extensions and to inaugurate certain steamboat traffic that had been contemplated. Thus the question to be determined is whether the abandonment of a projected investment, the failure to spend further cash in competitive business can constitute a crime punishable by fine and imprisonment; and we venture to say that no more surprising question has ever been raised, even by the Sherman law.

Railway Business Association.

President Geo. A. Post, in opening the annual business meeting of the Railway Business Association on December 19, referred to 4,000 shippers and receivers of freight who had signed a declaration favoring explicitly a policy permitting adequate railway revenue. This had been accomplished, he said, largely by the personal influence in the communities of the individual members of the association. He said:

"The very power and influence thus exerted through our individual members imposes upon us a peculiar obligation. Having

crystallized and registered a public sentiment, the next great step, of course, is to induce the government to fulfill that sentiment in actual public policy and administration. It would be easy to make such use of these declarations by shippers as to represent before the country and before governmental tribunals that these signatory shippers have said something different from what they meant to say, or from what we asked them to say. Indeed, as noted in the annual report of the general executive committee, some newspapers have given the impression that the purpose of this declaration was something which we neither had in mind nor suggested to the shippers who signed it. The misunderstanding lay in assuming that the Railway Business Association and these shippers co-operating with it were in some way engaged in a propaganda to secure some specific general advance in freight rates. We have no such program. We have no facilities for forming an opinion as to the reasonableness of particular freight rates or particular schedules and classifications. From the railway companies only could we obtain knowledge as to the merits of proposed advances, and we would have and would seek no standing in such litigation.

"Our function is broader than the consideration of any schedule at any time. No simple readjustment of freight rates can be a panacea. If every freight rate in the country were to be raised at one time there would continue to be constant changes, some responsive to business conditions, others arising from the elimination of alleged discriminations and inequities, others from further increases in expenses. What we urge and what at our request is urged by the thousands of shippers who have signed our declaration is not that this year or next year some single administrative decree shall issue giving the railways or any group of them an advance in rates, but that this year and every year, always and everywhere, the governmental authorities may do for the railroads precisely what the shippers' declaration says: 'Provide that in all adjustments of rates adequate revenue shall be insured them to meet existing obligations and to attract capital for necessary improvements and extensions.'

"That is to say, it is the function of the Railway Business Association to discuss policies, not symptoms, permanent conditions and not temporary expedients.

"The particular governmental agency having to deal with this matter is the Interstate Commerce Commission. It is in the public interest, in the interest of the railways and in the interest of the industries here organized that the commission should have the fullest co-operation and sympathy of all in whose power it lies to help. They cannot say, as we do, that they are not particularly concerned with specific cases. Their days are made up of specific cases. They must decide every case as it comes to them. They cannot enunciate some theoretical policy and hand it over to somebody else to administer. Both the framing of the policy and the administration thereof are their job. Yet both these tasks must be done. It would be idle to think of busying ourselves exclusively with the correction of inequities in rates and to leave unsolved, without determined and concerted effort, the question whether goods can be carried at all owing to congestion.

"We believe in the public spirit of the commission as now constituted. We feel sure they appreciate their responsibility. What we have endeavored and shall continue endeavoring to do is to bring about such a manifestation of public readiness for a fully progressive and constructive policy that the commission may feel free from at least one harassing perplexity—namely, the unreasoning resentment of any large element of the public when the commission, according to its light, shall point the way for the conservation of railway credit and hence the continued upbuilding of our territory and our industries.

"The committee speaks of the present increase of tonnage and lays strong emphasis upon the surplus which the railroads in such a period ought to lay up. If they do not accumulate some store of resources when traffic is heavy, when can they? You will remember that in the dark months following 1907 relief for the carriers was looked upon with disfavor because times were hard for general business. Ought the roads now to be again denied invigoration on the ground that for the moment they do not need it? Long contemplation of ways and means for keeping railway profits down has got many people into the habit of thinking that the lowest rate of return to which the courts will permit a commission to restrict a railway is the proper return, and they look askance at any yield

higher than that, even when it comes in some isolated year of plenty in the midst of several years of famine or short rations. A year like the present should be the time of liberal net income, so that the whole period in which it occurs may show a living average.

"The meaning of this for the Railway Business Association the committee makes clear. Now is the most opportune time, a time which will be with us, we know not how long, to urge adoption of a policy designed to permit that railway surplus upon which depend improvements out of earnings and credit for the sale of new securities or extensions."

The following officers were elected: President, Geo. A. Post, New York; vice-presidents, A. M. Kittredge, Dayton, Ohio; W. E. Clow, Chicago; G. W. Simmons, St. Louis, Mo.; S. P. Bush, Columbus, Ohio; Alba B. Johnson, Philadelphia, Pa.; H. G. Prout, Pittsburgh, Pa., and W. G. Pearce, New York; treasurer, Chas. A. Moore, New York, and assistant treasurer, M. S. Clayton, New York.

Western Railway Club.

At the December meeting of the Western Railway Club the following committee was appointed to report on the proposed changes in the M. C. B. rules of interchange: Geo. Thompson, New York Central Lines, chairman; G. F. Laughlin, Armour Car Lines; H. H. Harvey, Chicago, Burlington & Quincy; J. M. Borrowdale, Illinois Central, and C. J. Wymer, Chicago & Western Indiana.

Chesapeake & Ohio Agents' Association.

About 100 agents of the Chesapeake & Ohio, in a meeting at Clifton Forge, Va., December 12, took action looking to the organization of an association. F. J. Ginn, of Ironton, Ohio, is to be president, and E. L. Stratton, of Clifton Forge, secretary. Vice-president M. J. Caples and other officers of the road attended the meeting.

Canadian Society of Civil Engineers.

The annual meeting of the Canadian Society of Civil Engineers will be held on January 28, 29 and 30 at Montreal, Que. It is expected that the society's new building will be available for the meeting.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass. Convention, May 6-9, St. Louis, Mo.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass.
- AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York.
- AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill. Annual meeting, June 17-20, Buffalo, N. Y.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, St. Louis, Mo.; 3d Friday of March and September.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York.
- AMERICAN ELECTRICAL RAILWAY MANUFACTURERS' ASSOC.—George Keegan, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.
- AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York. Next meeting, May 21, New York.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Convention, October 21-23, 1913, Montreal.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Convention, March 18-20, 1913, Chicago.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago. Convention, June 11-13, Atlantic City, N. J.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.; annual, June, 1913.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.
- AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wenlinger, 13 Park Row, New York; 2d Tuesday of each month, New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Convention, January 21-23, Chicago.
- ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago. Annual meeting, May 28, Atlantic City, N. J.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago. Next meeting, May, 1913, Baltimore, Md.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago. Semi-annual meeting, June, 1913, Atlantic City, N. J.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago; annual, May 20, 1913, St. Louis, Mo.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—H. A. Neally, Joseph Dixon Crucible Co., Jersey City, N. J. Meeting with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—L. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.

ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 803 Fulton building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Walter P. Taylor, Richmond, Va. Next convention, June 18, Bluff Point, N. Y.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick building, Chicago. Annual meeting, May, 1913, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, Chicago & North Western, Escanaba, Mich.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Annual meeting, August 18, Richmond, Va.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—W. G. Wilson, Lehigh Valley, Easton, Pa.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Convention, May 26-29, 1913, Chicago.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago. Convention, June 16-18, Atlantic City, N. J.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Annual meeting, September 9-12, Ottawa, Can.

NATIONAL RAILWAY APPLIANCE ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.

NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.

NORTHERN RAILROAD CLUB.—C. L. Kennedy, C. M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria, Ill.; 2d Tuesday.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 2 Rector St., New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.

RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo. Next meeting, August 12-15, Nashville, Tenn.

RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City Southern, Kansas City, Mo.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa. Meetings, March 17, Chicago; June 10-11, New York; convention, October 14, Nashville, Tenn.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio. Annual convention, May 19-21, Chicago.

RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. Assocs.

RAILWAY TEL. AND TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.

RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Convention, September 8-12, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St., Station, Chicago.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala. Next meeting, April 17, Atlanta, Ga.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meeting with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago. Annual meeting, June 17, Los Angeles, Cal.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Annual meeting, August, 1913, Chicago.

UTAH SOCIETY OF ENGINEERS.—R. B. Ketchum, University of Utah, Salt Lake City, Utah; 3d Friday of each month, except July and August.

WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Monday in month, except July and August, Chicago.

Traffic News.

On Monday, December 16, the subway trains of the Interborough Rapid Transit Company, New York City, carried 1,208,626 passengers, several thousand more than were ever before carried in a single day.

The Illinois Central has announced that its suburban fares in the Chicago district will henceforth be on the basis of 2 cents a mile for single ride and round trip tickets. No change will be made in the commutation rates.

Railways between the Atlantic Seaboard and Chicago have re-adjusted excess baggage rates, which are based on a percentage of the passenger fare, by taking into account the differential fares. Hitherto the standard fare New York to Chicago, \$20, has been used as a basing figure for all lines.

The transportation instrumentalities committee of the National Industrial Traffic League has reported a recommendation that the league should use its influence upon its members to clean out cars thoroughly after unloading them, and with the railway associations to urge them to issue the necessary instructions so that shippers may be furnished with clean cars.

It is announced that on March 1 the Chicago, Peoria & New Orleans Transportation Company will begin running a steamer, the "Dubuque," from LaSalle, Ill., down the Illinois and Mississippi rivers to New Orleans. The boat will have a capacity of 900 tons of freight and 175 passengers. The company proposes to put on a second boat on the first of May.

The Traffic Club of New York.

The next regular meeting of the Traffic Club of New York will be held on December 30, instead of December 29, and will be largely of a social nature. Several special entertainment features will be provided by the entertainment committee.

The annual dinner of the club will be held on February 11.

Railroad Control of Steamship Lines.

The commissioner of corporations, Department of Commerce and Labor, in a report published this week, presents an elaborate narrative of coastwise and lake transportation companies, and comments on the fact that a large part of this traffic is controlled by railroad companies. Moreover, the railroads control 90 per cent. of the mileage of private canals in this country; and this fact, in the opinion of the commissioner, calls for consideration, and possibly for action, by Congress. The New York, New Haven & Hartford "has pursued a determined policy of suppressing competition on Long Island sound." The New Haven, owning shares in the Eastern Steamship Company, exercises almost complete control over the traffic between New York City and New England. The Southern Pacific, running steamers between New York and ports on the Gulf of Mexico, "shows a disposition to restrict competition." The railroads control the largest passenger and package-freight lines on the Great Lakes; and the anthracite coal roads own large fleets of vessels on the north Atlantic coast. Twenty railroads control steam vessels and barges of 810,000 gross tonnage.

INTERSTATE COMMERCE COMMISSION.

The commission has further suspended from December 24 until June 24 certain schedules in Leland's tariff, which advance rates for the transportation of cotton lintners from points in Texas to New Orleans, La., and other destinations.

The commission holds that it has jurisdiction over wireless messages from a commercial station in the United States to a ship at sea, whether a United States or a foreign ship, but that it has no jurisdiction over messages between two American ships at sea.

The commission has further suspended from December 17 until June 17 certain tariffs, which advance rates for the transportation of lumber, carloads, from Lockhart, Ala., Samson, Ala., and other points to Washington, D. C., Baltimore, Md., and other destinations.

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REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF OCTOBER, 1912.																
Operating expenses.																
Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of way and structures.			Traffic.	Trans- portation.	General.	Total.	Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	(or decr.) comp. with last year.
		Freight.	Passenger.	Total.	inc. misc.	structures.	equipment.									
Atlantic City	167	\$67,649	\$59,296	\$126,945	\$36,054	\$16,024	\$1,870	\$78,792	\$1,427	\$134,127	\$3,683	-\$2,453	\$9,000	-\$7,770	\$1,914	\$1,914
Belt Ry. Co. of Chicago	21	694,073	111,575	805,648	288,653	30,461	474	114,657	6,336	174,732	113,921	.....	6,686	107,235	14,876	14,876
Colorado & Southern	1,073	193,513	80,685	274,198	88,331	17,417	10,358	241,353	23,026	577,262	281,060	.....	29,175	251,659	20,629	20,629
Duluth, South Shore & Atlantic	626	133,603	49,599	183,202	222,088	35,471	11,588	123,712	8,812	232,873	55,898	.....	18,000	37,888	12,323	12,323
Georgia	307	136,958	25,446	162,404	172,633	31,028	19,625	62,057	5,930	115,136	7,876	.....	3,102	10,978	24,341	24,341
Louisiana Ry. & Navigation	351	76,396	36,571	112,967	121,397	38,002	15,120	42,130	3,053	102,630	18,767	.....	3,000	16,264	14,034	14,034
Louisville, Henderson & St. Louis	200	2,787,898	61,264	2,849,162	3,541,898	314,991	53,516	895,659	46,510	1,648,098	1,893,800	.....	202,450	1,716,503	672,148	672,148
Minneapolis, St. Paul & Sault Ste. Marie	3,976	61,413	121,225	182,638	88,642	10,157	5,319	19,354	4,750	40,052	48,590	.....	2,954	3,136	18,452	18,452
Oahu Ry. & Land Co.	101	1,209,379	454,031	1,663,410	1,771,992	214,962	183,208	589,518	49,560	1,081,431	690,461	.....	6,776	598,943	42,974	42,974
Oregon-Washington R. R. & Nav. Co.	1,015	3,855,117	620,323	4,475,440	4,683,352	377,578	737,771	1,364,494	62,311	2,581,476	2,101,776	.....	86,002	2,062,448	436,731	436,731
Philadelphia & Reading	21	168,500	71,934	240,434	170,298	38,899	103	107,488	9,528	184,266	56,322	.....	5,500	50,822	11,046	11,046
Port Reading	510	1,535,576	410,990	1,946,566	2,149,519	251,593	272,254	749,579	67,173	1,400,483	749,036	.....	3,185	664,851	104,021	104,021
Seaboard	556	1,353,576	410,990	1,764,566	1,702,926	46,798	40,411	115,151	12,903	222,967	20,323	.....	2,142	234,417	21,597	21,597
Spokane, Portland & Seattle	129	62,211	21,546	83,757	88,302	12,176	963	36,110	2,442	67,979	20,323	.....	1,111	17,134	5,328	5,328
Ulster & Delaware	543	516,899	88,643	605,542	117,191	93,071	17,223	290,520	12,398	530,403	100,074	.....	20,000	80,074	80,074	80,074
Western Maryland	167	\$277,392	\$702,804	\$979,196	\$1,034,687	\$1,034,687	\$1,034,687	\$1,034,687	\$1,034,687	\$1,034,687	\$1,034,687	.....	-\$14,905	\$364,930	\$25,289	\$25,289
Atlantic City	21	2,161,718	599,880	2,761,598	1,059,906	66,176	128,350	409,003	23,422	629,032	430,874	.....	30,365	400,509	44,876	44,876
Belt Ry. Co. of Chicago	1,073	774,142	135,312	909,454	1,133,996	121,107	12,176	1,354,759	189,427	6,053,454	5,080,446	.....	116,700	740,036	112,458	112,458
Colorado & Southern	626	193,513	80,685	274,198	88,331	17,417	10,358	241,353	23,026	577,262	281,060	.....	72,000	100,214	100,214	100,214
Duluth, South Shore & Atlantic	307	133,603	49,599	183,202	222,088	35,471	11,588	123,712	8,812	232,873	55,898	.....	11,989	224,776	274,125	274,125
Georgia	351	136,958	25,446	162,404	172,633	31,028	19,625	62,057	5,930	115,136	7,876	.....	22,000	225,134	31,030	31,030
Louisiana Ry. & Navigation	351	76,396	36,571	112,967	121,397	38,002	15,120	42,130	3,053	102,630	18,767	.....	12,000	53,399	61,541	61,541
Louisville, Henderson & St. Louis	200	2,787,898	61,264	2,849,162	3,541,898	314,991	53,516	895,659	46,510	1,648,098	1,893,800	.....	63,479	4,539,168	811,510	811,510
Minneapolis, St. Paul & Sault Ste. Marie	3,976	61,413	121,225	182,638	88,642	10,157	5,319	19,354	4,750	40,052	48,590	.....	26,000	235,816	153,815	153,815
Oahu Ry. & Land Co.	101	1,209,379	454,031	1,663,410	1,771,992	214,962	183,208	589,518	49,560	1,081,431	690,461	.....	7,778	2,404,300	2,404,300	2,404,300
Oregon-Washington R. R. & Nav. Co.	1,015	3,855,117	620,323	4,475,440	4,683,352	377,578	737,771	1,364,494	62,311	2,581,476	2,101,776	.....	38,968	2,404,300	1,842,527	1,842,527
Philadelphia & Reading	21	168,500	71,934	240,434	170,298	38,899	103	107,488	9,528	184,266	56,322	.....	32,000	370,633	167,520	167,520
Port Reading	510	1,535,576	410,990	1,946,566	2,149,519	251,593	272,254	749,579	67,173	1,400,483	749,036	.....	22,000	200,307	52,298	52,298
Seaboard	556	1,353,576	410,990	1,764,566	1,702,926	46,798	40,411	115,151	12,903	222,967	20,323	.....	324,000	1,810,008	6,181	6,181
Spokane, Portland & Seattle	129	62,211	21,546	83,757	88,302	12,176	963	36,110	2,442	67,979	20,323	.....	213,600	839,298	52,874	52,874
Ulster & Delaware	543	516,899	88,643	605,542	117,191	93,071	17,223	290,520	12,398	530,403	100,074	.....	13,200	154,701	19,281	19,281
Western Maryland	167	\$277,392	\$702,804	\$979,196	\$1,034,687	\$1,034,687	\$1,034,687	\$1,034,687	\$1,034,687	\$1,034,687	\$1,034,687	.....	80,000	576,559	295,219	295,219

— Indicates Deficits, Losses and Decreases.

167: 2 3,770; 3 99; 4 1,891; 5 3,054; 6 551.

— Indicates Deficits, Losses and Decreases.

Mileage operated in previous period—1 617; * 3,770; * 3,99; * 4,891; * 3,054; * 551.

REVENUES AND EXPENSES OF EXPRESS COMPANIES AS REPORTED TO THE INTERSTATE COMMERCE COMMISSION.

Name of Company.	Miles of line covered.		Express revenue.	Gross receipts from operation.	Less express privileges.	Total operating revenues.	Maintenance.	Traffic.	Trans- portation.	General.	Total.	Revenue (or deficit —).	Taxes.	(or loss —), last year.
	Steam roads.	Other lines.												
Adams Express Co.	32,430 ¹	4,786	\$2,948,855	\$2,989,811	\$1,581,205	\$1,408,606	\$63,959	\$11,966	\$1,091,366	\$89,420	\$1,256,711	\$151,895	\$21,250	\$130,645
American Express Co.	56,246 ²	2,894	3,758,065	3,915,722	1,778,735	2,136,987	147,414	33,471	1,550,587	162,420	1,858,892	243,095	29,026	214,069
Canadian Express Co.	6,123 ³	830	282,787	291,732	131,319	159,815	9,301	1,239	110,378	7,698	128,162	31,199	2,250	28,949
Canadian Northern Express Co.	4,022 ⁴	22	60,564	62,372	24,269	38,103	1,170	1,223	16,213	1,553	18,159	19,944	540	19,404
Globe Express Co.	2,904 ⁵	399	248,435	252,055	132,462	99,595	1,735	1,383	23,960	4,873	31,490	3,905	650	2,920
Great Northern Express Co.	8,634 ⁶	318	105,491	105,839	46,602	59,237	882	1,069	69,914	4,014	76,732	22,863	4,499	18,958
National Express Co.	7,310 ⁸	315	264,207	267,828	137,249	130,579	2,609	3,151	77,620	2,972	52,682	6,555	4,500	10,115
Northern Express Co.	32,071 ¹⁰	821	1,370,364	1,396,892	717,587	679,305	16,085	6,943	471,191	77,686	571,905	107,400	14,577	92,823
Southern Express Co.	28,799 ¹¹	3,954	2,802,566	2,830,335	1,895,178	935,157	36,004	10,441	836,105	54,017	936,567	9,345	7,935	43,708
United States Express Co.	64,166 ¹²	17,298	2,818,506	2,866,366	1,367,319	1,499,047	74,168	32,214	1,099,787	85,288	1,291,457	207,590	54,658	59,378
Wells, Fargo & Co.	4,888 ¹³	12	110,121	110,121	56,637	53,484	1,380	2,056	39,147	3,011	45,594	7,890	851	7,039
Western Express Co.														\$78,082
ELEVEN MONTHS OF FISCAL YEAR, 1912.														
Adams Express Co.	32,430 ¹	4,786	\$30,782,301	\$31,175,403	\$16,003,675	\$15,171,728	\$772,488	\$100,932	\$12,046,827	\$927,354	\$13,847,601	\$1,324,127	\$219,858	\$1,104,269
American Express Co.	56,246 ²	2,894	38,399,982	40,002,730	18,879,785	21,122,945	651,509	337,111	16,380,224	1,431,593	18,800,437	2,322,508	345,987	1,976,521
Canadian Express Co.	6,123 ³	830	2,656,066	2,716,836	1,259,778	1,457,048	70,990	13,319	1,064,880	79,575	1,228,764	162,853	24,750	203,534
Canadian Northern Express Co.	4,022 ⁴	22	544,881	563,426	218,523	344,903	2,511	4,135	158,694	16,710	182,650	16,285	3,971	158,882
Globe Express Co.	2,904 ⁵	399	248,435	252,055	132,462	99,595	1,735	1,383	23,960	4,873	31,490	3,905	8,200	18,958
Great Northern Express Co.	8,634 ⁶	318	1,143,241	1,148,213	463,965	684,250	21,393	36,508	854,535	45,514	339,448	84,387	35,430	128,465
National Express Co.	7,310 ⁸	315	2,645,428	2,681,792	1,364,575	1,317,217	21,393	36,508	854,535	45,514	339,448	84,387	5,381	107,496
Northern Express Co.	32,071 ¹⁰	821	14,151,661	14,422,972	7,092,673	7,330,299	21,361	97,702	4,826,134	697,136	5,834,603	1,495,696	49,500	289,245
Southern Express Co.	28,799 ¹¹	3,954	19,041,270	19,336,516	9,049,326	10,287,190	368,240	168,524	9,077,082	552,694	10,166,540	120,650	38,400	131,414
United States Express Co.	64,166 ¹²	17,298	29,083,780	29,589,120	14,073,092	15,516,028	564,127	297,333	11,375,623	958,651	13,195,734	2,320,294	302,106	2,018,188
Wells, Fargo & Co.	4,888 ¹³	12	1,033,504	1,052,570	549,873	502,697	12,913	30,979	388,151	37,661	469,704	32,993	8,609	24,384
Western Express Co.														\$261; * 816; * 3,849; * 2,357; * 363; * 780; * 378; * 485.
Operated in previous periods: Steam Roads— ¹ 32,730; ² 54,333; ³ 7,362; ⁴ 3,369; ⁵ 2,858; ⁶ 8,469; ⁷ 1,422; ⁸ 7,186; ⁹ 31,735; ¹⁰ 28,837; ¹¹ 47,303; ¹² 4,845.														
u 11,116; 12 8.														

The commission is to make a new and exhaustive investigation of the anthracite coal roads, as announced in another column.

The commission has further suspended from December 13 until June 13 certain schedules containing rules and regulations governing diversion, reconsignment and other privileges of coal, coke, iron ore and other commodities handled by carriers at Detroit, Mich.

The commission has suspended until April 14, certain tariffs which advance rates for the transportation of wheat and coarse grain from Kansas City, Mo., and other Missouri river points to points in southern Illinois. The advances are in most instances 2 cents per 100 lbs.

The commission has suspended until March 31 certain tariffs which advance rates for the transportation of hardwood lumber and articles taking same rates from points in Arkansas, Louisiana and other states, to Memphis, Tenn., St. Louis, Mo., and other points of destination. The advances average about 2 cents per 100 lbs.

The commission has suspended until April 14 certain tariffs which advance the charges for switching coal and coke at Chicago from connecting carriers to industries and coal yards on the tracks of the Chicago, Milwaukee & St. Paul within the Chicago switching district by amounts ranging from 6 to 12 cents per ton.

The commission has suspended from December 26 until April 25 an item in a supplement to Leland's tariff, which advances the rates on grain products from 22 stations in southern Illinois, including such points as Evansville, Murphysboro, Sparta, Waterloo, etc., to points in Texas. In most instances the advance is 7 cents per 100 lbs.

The commission has further suspended from December 13 until June 13, 1913, certain schedules in supplements to the tariff of the Atchison, Topeka & Santa Fe, which advance rates for the transportation of fresh meats and packing house products from Oklahoma City, Okla., and other points to points in the state of New Mexico.

The commission has suspended from December 15 until March 31 an item in the supplement to the tariff of the Norfolk & Western which advances rates for the transportation of chairs from Madison, N. C., and other points to Boston, Mass., New York, Philadelphia, Pa., and Baltimore, Md. The present rates on chairs, in less than carloads, from Madison to New York and Boston are 49 and 53 cents per 100 lbs., respectively; the proposed rates 55 cents to each point; making an advance of 2 cents to Boston and 6 cents to New York.

In the federal court at Philadelphia, December 19, an order was issued directing the Lehigh Valley Railroad Company to pay to Meeker & Co., and successors, the sum of \$122,442, together with \$25,000 counsel fees, in the suit that was brought to compel compliance with an order of the Interstate Commerce Commission directing reparation on shipments of coal from the anthracite regions to tidewater, New York harbor. Under the order as issued by the commission the rates per ton on coal were reduced 15 cents a ton on prepared sizes, 10 cents a ton on pea and 5 cents on steam sizes.

Rate on Iron Ore Not Unreasonable.

Wharton Steel Company v. Delaware, Lackawanna & Western, et al. Opinion by Commissioner Meyer:

The complainants assail the rates on iron ore in carloads from certain points in northern New Jersey and southeastern New York to the consuming furnaces in the Lehigh and Schuylkill Valley districts of eastern Pennsylvania; also the rate from Keene's, N. Y., to Wharton, Pa. From a consideration of the record and from the tests and comparisons made by the aid of averages obtainable from the annual reports of the defendants, the commission is unable to find that the rates, as a whole, are unreasonable in themselves. Some of the rates were found to be relatively unreasonable, and the commission recommended that certain readjustments should be made and inequalities and inconsistencies in the schedules removed. The commission also

decided that the rate from Keene's to Wharton was not unreasonable as applied to complainants' shipments, and following *Southern Pacific Co. v. I. C. C.*, 219 U. S., 433, the defendant had not damaged the complainant by reason of defendant's action in cancelling the rate of \$1.35 and restoring the rate of \$1.50, now in force. (25 I. C. C., 303.)

STATE COMMISSIONS.

The Arizona railway commission has called on the Atchison, Topeka & Santa Fe to show cause why an order should not be issued requiring the road to receive Arizona local passengers on its limited trains.

The railroad commission of Louisiana has ordered the New Orleans Great Northern to employ a flagman on all of its trains. It appears that on the "Shore Line," so-called, passenger trains are run without a flagman. The porter, whose principal duty is to look after the comfort of passengers, is depended upon to flag, if necessary. The commission holds that the porter cannot properly attend to both duties.

The New York State Public Service Commission, Second district, in granting permission to the New York, Westchester & Boston to change the route of its extension eastward from New Rochelle to Portchester, makes its order conditional on a limitation of passenger fares. The commission requires, in substance, that the road shall agree that for one year, at least, the rates on the new line shall be kept on the low basis which now prevails on that portion of the company's line already in operation (from New Rochelle and White Plains to the borough of the Bronx, New York City). The rates are about 15 per cent. lower than those proposed by the company when the same subject was up for consideration about six months ago. For single trips between Mamaroneck and New York the proposed fare is 20 cents, whereas by the main line of the New Haven road it is 50 cents. From Portchester to New York, the Westchester rate is 30 and the New Haven rate 60. Rates for monthly tickets are from \$1 to \$1.25 lower than by the New Haven road; but the Westchester terminus in New York City is about five miles north of the New Haven terminus.

The Portchester extension will lie near to and parallel to the line of the New York, New Haven & Hartford, which controls the Westchester. The commission imposes the condition that the new road shall be built on land owned by the railroad company in fee or acquired by it in proceedings under the condemnation law. A double-track road must be built as soon as reasonably practicable.

COURT NEWS.

The Illinois supreme court has rendered a decision in the case of the Chicago & Eastern Illinois v. the Secretary of the State of Illinois, holding that the consolidation of the Evansville Belt and the Evansville & Terre Haute with the Chicago & Eastern Illinois created a new corporation, and that the state may collect recording fees based on the entire amount to which the capital stock has been increased.

WESTERN AUSTRALIAN RAILWAYS.—During the year ended June 30 last the earnings of the Western Australian Government railways amounted to \$9,423,020, an increase of \$200,925 over those of the previous year, while the working expenses were \$8,915,650, leaving a net credit balance of \$507,370 on the year's business—a very satisfactory result, taking into consideration the unusually adverse weather conditions and the consequently exceptionally poor harvest. There has been no material change in passenger or freight rates, and the fact of an increased revenue in the face of unfavorable conditions is in itself conclusive evidence of the Western State's wealth and resources. The mileage at present open for traffic is 2,877 miles, inclusive of sidings, 222 miles of new line being opened during the year, while the construction of 764½ miles is now in hand. Freight traffic handled reached 2,480,317 tons, firewood and timber being the chief commodities, with percentages of 27.98 and 22.88 to the total tonnage respectively. Passenger journeys during the period totaled 16,390,261, an increase of over a million and a half. Employees engaged throughout the year numbered 7,464.

Railway Officers.

Executive, Financial and Legal Officers.

E. N. Weller, acting treasurer of the Pere Marquette, has been appointed treasurer, with office at Detroit, Mich.

A. H. Palm, general manager of the Pittsburg & Susquehanna, at Philipsburg, Pa., has been appointed receiver of that road.

Finley J. Shepard, who was appointed assistant to the president of the Missouri Pacific and St. Louis, Iron Mountain & Southern, effective December 1, as announced in these columns, was born in Connecticut. He began railway work in 1889 in the general offices of the Northern Pacific at St. Paul, Minn., and filled various positions with that road, including that of assistant general manager, resigning in 1901 to go with the Atchison, Topeka & Santa Fe at Chicago. The following year he was made general superintendent of the Coast lines, with headquarters at Los Angeles, and remained in that capacity three years, when he left to engage in private business. Mr. Shepard was made assistant to the first vice-president of the Missouri Pacific and St. Louis, Iron Mountain & Southern in June, 1911, and was appointed assistant to the president of the Denver & Rio Grande in January, 1912, which position he still retains, in addition to his duties as assistant to the president of the Missouri Pacific-Iron Mountain System. Mr. Shepard's headquarters are at New York.

George W. Vallery, president and general manager of the Colorado Midland, at Denver, Colo., has been appointed receiver of that road.

Agnew T. Dice, general manager of the Philadelphia & Reading, who has been elected also vice-president of the company, with headquarters at Reading, Pa., was born on November 2, 1862, at Scotland, Pa., and was educated at Chambersburg Academy. He began railway work on July 17, 1881, in the engineering and maintenance of way departments of the Pennsylvania Railroad, remaining in the service of that road, until January, 1892, when he went to the New York Central & Hudson River as superintendent of signals. Subsequently he was made assistant superintendent of the Hudson division of that road, which place he held until April, 1894. At that time he resigned and went to the Reading as superintendent of the Atlantic City Railroad. In January, 1896, he was made assistant superintendent of the Reading division of the Philadelphia & Reading, and the following month was appointed superintendent of the Shamokin division. In May, 1903, he was promoted to general superintendent; on January 1, 1910, he was made general manager, and on January 1, 1913, he becomes vice-president and general



F. J. Shepard.

manager, as above noted. Mr. Dice is a member of the conference committee of managers, representing Eastern railroads, negotiating with enginemen and firemen, on the subject of wages, and on Committee on Maintenance of the American Railway Association.

Edgar R. Hart has been appointed assistant general solicitor of the lines west of the Missouri river of the Chicago & North Western, with headquarters at Omaha, Neb.

F. W. Pope has been appointed auditor of receipts of the Missouri, Kansas & Texas, of Texas, with headquarters at Dallas, Tex., to succeed George B. Boggs, resigned.

E. T. Lamb, general manager of the Atlanta, Birmingham & Atlantic, has been appointed a receiver, succeeding S. L. Schoonmaker; H. M. Atkinson is also a receiver.

W. J. Harahan, president of the Seaboard Air Line, with office at Norfolk, Va., has been elected president also of the Raleigh & Charleston and the Marion & Southern, succeeding C. H. Dix, resigned.

Agnew T. Dice, general manager of the Philadelphia & Reading, at Reading, Pa., has been elected vice-president and general manager, and John F. Auch, freight traffic manager at Philadelphia, Pa., has been elected vice-president and freight traffic manager, effective January 1.

John T. Walsh, assistant auditor and assistant treasurer of the Ann Arbor, with headquarters at Toledo, O., has resigned, effective January 1, to become connected with Haskins & Sells, public accountants, New York City.

Ralph Budd, chief engineer of the Spokane, Portland & Seattle, the Spokane & Inland Empire and the Oregon Trunk, with headquarters at Portland, Ore., has been appointed assistant to the president of the Great Northern, with headquarters at St. Paul, Minn., effective January 1.

W. L. Seddon, chief engineer of the Seaboard Air Line at Portsmouth, Va., has been appointed assistant to president and C. V. Fleming, formerly chief clerk to vice-president and general manager, has been appointed chief clerk to the president, with office at Norfolk, Va., succeeding W. D. Faucette, promoted.

A. J. County, assistant to the vice-president of the Pennsylvania Railroad, has been appointed special assistant to the president, and O. J. DeRousse, chief clerk in the office of the president, has been appointed general assistant. Ivy L. Lee, formerly in charge of the publicity work of the company, has been appointed executive assistant. Effective January 1.

Operating Officers.

Frank Hooker Alfred, whose appointment as general manager of the Pere Marquette, with office at Detroit, Mich., has been announced in these columns, was born December 24, 1866, at Logan, O. He was educated at the University of Michigan and the Ohio State University and began railway work in 1887 as rodman on construction on the Columbus, Lima & Milwaukee. Later he was made resident engineer on that road and from March, 1889, to 1894, he was assistant engineer of the Norfolk & Western in charge of field work on construction of terminal at Columbus, O.; then until April, 1896, was assistant to the chief engineer of the Hocking Valley and from the latter date to October, 1899, engineer maintenance of way of the Cleveland, Akron & Columbus. He then went to the Wheeling & Lake Erie as engineer maintenance of way, resigning in 1900 to become assistant engineer of the Pere Marquette. On October 1, 1902, he was promoted to chief engineer of that road, which position he held until October 1, 1905, when he was appointed general manager of the Canadian White Company, Limited, Montreal. Mr.



A. T. Dice.



F. H. Alfred.

Alfred left that company in 1908, and was subsequently assistant to the president of the Cincinnati, Hamilton & Dayton, general superintendent of that road, and assistant general manager of the Pere Marquette, until his recent appointment as general manager of the latter road, which becomes effective January 1.

J. A. Gordon, division superintendent of the Chicago Great Western at Chicago, has been appointed general superintendent of the Pere Marquette, with headquarters at Detroit, Mich.

Charles H. Ewing, superintendent of the Atlantic City Railroad at Camden, N. J., has been appointed general superintendent of the Philadelphia & Reading and subsidiary lines, with office at Reading, Pa., effective January 1.

A. D. MacTier, assistant to vice-president of the Canadian Pacific at Montreal, Que., has been appointed general manager of eastern lines, in charge of maintenance and operation, with office at Montreal.

S. V. Rowland has been appointed inspector of transportation of the Chicago Great Western, with office at Chicago, in place of F. Kinsey, promoted. G. M. Lindsay has been appointed inspector of merchandise handling, with headquarters at Chicago, succeeding Mr. Rowland.

Frederick M. Falck, superintendent of the Philadelphia & Reading, at Philadelphia, Pa., has been appointed superintendent of the Atlantic City Railroad, with office at Camden, N. J., succeeding Charles H. Ewing, promoted, and W. Frank Eckert has been appointed superintendent of the Wilmington and Columbia division of the Philadelphia & Reading, with office at Reading, Pa., succeeding Mr. Falck.

Traffic Officers.

W. C. McBride has been appointed general agent of the Missouri Pacific and the St. Louis, Iron Mountain & Southern, with headquarters at Portland, Ore.

J. T. Hendricks, vice-president of the Western Maryland, at Baltimore, Md., has been appointed general traffic manager of the Missouri Pacific, with headquarters at St. Louis, Mo., effective January 1.

Oscar C. Sherer, traveling freight agent of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at Duluth, Minn., has been appointed contracting freight agent, with office at Duluth, in place of John D. Mahon, promoted.

H. L. Redfield, who recently was appointed first assistant general freight agent and chief of the tariff bureau of the Texas & Pacific, with headquarters at Dallas, Tex., has tendered his resignation, to take effect January 1, to engage in private business.

Conrad E. Spens, who on December 1 became assistant freight traffic manager of the Chicago, Burlington & Quincy system, as announced in these columns, was born August 14, 1875, at Princeton, Ill.



C. E. Spens.

He received a high school and business college education and has been connected with the Burlington since 1892. He began railway work on February 22, 1892, as stenographer in the local freight office at Chicago, and six months later was transferred to the general freight office as correspondence clerk. He was subsequently until April 1, 1903, chief clerk to the assistant general freight agent and chief clerk to the traffic manager. On the latter date Mr. Spens was appointed assistant general freight agent at Chicago, and was promoted to general freight agent of the lines west of the Missouri river on August 1, 1905. He remained in that position until his recent appointment as assistant freight traffic manager of the Burlington system, with headquarters at Chicago.

Charles Theodore Mandel, whose appointment as assistant general passenger agent of the Carolina, Clinchfield & Ohio, with headquarters at Johnson City, Tenn., has been announced in these columns, was born on June 28, 1865, at Steubenville, Ohio, and was educated in the public schools of his native town. He began railway work in November, 1879, in the mechanical department of the Pittsburgh, Cincinnati, Chicago & St. Louis, and in June, 1880, entered the passenger department of the same road. He then held various positions on a number of different roads and the Western Passenger Association until December, 1894, when he left railway work. From March, 1895, to February, 1899, he was passenger rate and division clerk, in the auditor's office of the Chicago & North Western, and then was in the passenger department of the Erie and later of the Southern. In September, 1902, he was appointed secretary of the Chicago Local Passenger Bureau at Chicago, and in November, 1905, entered the passenger department of the Chicago, Rock Island & Pacific. From May, 1906, to the following November he was secretary of the New Orleans Passenger Bureau and then for one year was secretary of the Southern Car Service Association at New Orleans, La. From February, 1908, to January, 1909, he was in the general passenger department of the Louisville & Nashville, at Louisville, Ky. He was then appointed traveling passenger agent of the Carolina, Clinchfield & Ohio, which position he held at the time of his recent appointment as assistant general passenger agent of the same company.

Engineering and Rolling Stock Officers.

D. W. Cross has been appointed master mechanic of the Toledo, St. Louis & Western, with headquarters at Frankfort, Ind., effective January 1.

W. E. Symons has been appointed superintendent of motive power of the San Antonio & Aransas Pass, with headquarters at San Antonio, Tex., to succeed G. W. Taylor.

L. S. Allen, roadmaster of the Ann Arbor at Owosso, Mich., has been appointed engineer maintenance of way, with office at Owosso, succeeding James K. Howard, resigned.

W. D. Faucette, chief clerk to the president of the Seaboard Air Line, has been appointed chief engineer, with headquarters at Norfolk, Va., succeeding W. L. Seddon, promoted. (See Executive, Financial and Legal Officers.)

M. H. Hovey has withdrawn from the signaling department of the joint engineering staff serving the Wisconsin railroad and tax commissions to become consulting engineer for a group of interurban electric railways in Indiana in connection with an extensive block signaling installation. J. N. Bidwell will succeed Mr. Hovey.

OBITUARY.

Jacob Kamm, who had been president of the Vancouver Transportation Company for 38 years, died on December 14, at Portland, Ore., aged 89 years.

M. H. Dance, assistant engineer of construction of the Illinois Central, in charge of the construction of the new terminal buildings at Centralia, Ill., was killed on December 19, when a motor car in which he was riding was struck by an engine. Mr. Dance was born in 1878 and entered the service of the Illinois Central in 1901 as masonry inspector. He was appointed assistant engineer of construction in 1907.

Thomas Wheeler Galleher, general freight agent of the Baltimore & Ohio, at Baltimore, Md., died on December 18, at his home in Baltimore. He was born on April 7, 1858, at Fredericktown, Ohio, and began railway work in November, 1872, as telegraph operator on the Baltimore & Ohio. In January, 1878, he was made chief clerk to division freight agent of the Central Ohio, now a part of the Baltimore & Ohio, and was later agent of the Baltimore & Ohio Express at Columbus. He was appointed traveling freight agent of the Baltimore & Ohio in January, 1882, and from May, 1882, to December, 1886, was chief clerk in the freight department of the Baltimore & Ohio, and of the Pittsburgh & Western, now a part of the Baltimore & Ohio. He became division freight agent of the Baltimore & Ohio in January, 1887, and from March, 1896, to March, 1897, was general freight agent in charge of the Pittsburgh division and all lines west of the Ohio river. He later became general freight agent of the same road for the lines east of the Ohio river.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

THE PITTSBURGH, SHAWMUT & NORTHERN has ordered 2 mogul locomotives from the Baldwin Locomotive Works.

THE ALGER-SULLIVAN LUMBER COMPANY has ordered 2 ten-wheel locomotives from the Baldwin Locomotive Works.

BUTLER BROTHERS, St. Paul, Minn., have ordered 4 six-wheel switching locomotives from the Baldwin Locomotive Works.

THE CINCINNATI, NEW ORLEANS & TEXAS PACIFIC has ordered 10 consolidation locomotives from the Baldwin Locomotive Works.

THE LAKE SUPERIOR TERMINAL & TRANSFER COMPANY has ordered 1 eight-wheel locomotive from the Baldwin Locomotive Works.

THE MAINE CENTRAL, which recently ordered two Pacific type locomotives from the American Locomotive Company, has increased this order to three Pacific type locomotives.

THE DELAWARE & HUDSON, mentioned in the *Railway Age Gazette* of December 20, as being in the market for 12 consolidation locomotives, has increased this inquiry to 15 consolidation locomotives.

CAR BUILDING.

THE WHEELING & LAKE ERIE is in the market for 1,500 coal cars.

THE DELAWARE, LACKAWANNA & WESTERN is in the market for 35 suburban coaches.

THE BALTIMORE & OHIO has ordered 2,100 cars from the Cambria Steel Company.

THE PORT HURON & NORTHERN has ordered two 70-ft. gasoline motor cars from the McKeen Motor Car Company.

THE TORONTO, HAMILTON & BUFFALO has ordered 1,250 freight cars from the National Steel Car Company, and 250 Hart ballast cars from the Canadian Car & Foundry Company.

THE DENVER, NORTHWESTERN & PACIFIC has ordered 300 gondola cars from the Pressed Steel Car Company, and 125 stock cars from the American Car & Foundry Company.

THE ATCHISON, TOPEKA & SANTA FE has ordered 900 refrigerator cars, 900 furniture cars and 900 gondola cars from the American Car & Foundry Company, and 35 all-steel coaches, 25 all-steel chair cars, 20 all-steel baggage and mail cars, 30 all-steel baggage and express cars, and 2 parlor cars from the Pullman Company.

IRON AND STEEL.

THE HARRIMAN LINES are reported to have ordered 200,000 tons of rails.

THE ILLINOIS CENTRAL has ordered 1,614 tons of channels from the Cambria Steel Company.

THE ST. LOUIS & SAN FRANCISCO has ordered 3,600 tons of trusses and girders from the McClintic-Marshall Construction Company and the Virginia Bridge Company, and 900 tons of bridge steel from the American Bridge Company.

SIGNALING.

The El Paso & Southwestern during the coming year expects to install automatic block signals on 40 miles of its line.

The Chicago & Alton is to introduce telephones for train despatching between St. Louis and Bloomington, 160 miles. Western Electric No. 50 selectors will be used.

The New York, Ontario & Western during the coming year expects to erect automatic block signals on 15 miles of its line, double track, between Livingston Manor and Hortons.

The New York, Chicago & St. Louis plans during the coming year to install automatic block signals on 80 miles of its line, 68 miles single track and 12 miles double track. The signals will be furnished by the American Railway Signal Company of Cleveland.

The International & Great Northern is to install mechanical interlockings at New Braunfels, Tex., at the crossing with the Missouri, Kansas & Texas, and at Jacksonville, Tex., at the crossing of the St. Louis Southwestern; 23 functions and 26 respectively.

The Boston & Maine, which has over 1,000 miles of its line equipped with automatic block signals, proposes to install these signals during the coming year on an additional length of 191 miles of road. The plans of the coming year include also interlocking plants at Worcester, Barber, South Lawrence, Gardner, and North Chelmsford, Mass.

The New York, New Haven & Hartford plans during the coming year to install automatic block signals on fifty miles of its lines. All-electric interlocking plants are to be put in at Brookfield Junction, Conn., at Westerly, R. I., and at Worcester, Mass., two at the last named place. A mechanical interlocking plant is to be erected at Woodmont, Conn.

The Chicago & North Western has announced the installation of 137 miles of new automatic block signaling during the past year, and plans have been made for completing during the next year the block signal protection of the entire through line from Chicago to St. Paul and Minneapolis. The automatic signaling completed during the past year includes 37 miles, double track, Butler to Clyman Junction, 58.1 miles, single track, Harvard, Ill., to Evansville, Wis., by way of Janesville, and 36.9 miles, double track, Madison to Baraboo, Wis.

The Panama Railroad (not shown in our annual table) has 15 miles of its line, single track, equipped with automatic block signals; and the manual block system is in use on seven miles single track and seven miles double track. This road plans, during the coming year, to equip the entire length of the road, 51 miles, with automatic block signals, three position, upper right hand quadrant; and the manual block system will be discontinued as fast as the automatic signals are finished. Plans include also three new mechanical interlockings, one at Corozal, 29 levers; one at Caimito, 12 levers, and one at Bridge 140, eight levers. All of the work will be done by the signal department of the road.

New Block and Interlocking Signals on the Pennsylvania.

In connection with the statement of mileage of road block signaled, which is given on another page of this paper, the Pennsylvania Railroad has sent us the following notes concerning the signaling work laid out for the coming year on the lines east of Pittsburgh and Erie:

Twenty-two miles of automatic signals to be installed between Atglen and Dillerville on the Philadelphia division; 5 miles automatic between Harrisburg and Rockville, Philadelphia division (replacing present lower quadrant d. c. motor signals); 10 miles automatic between Branch Intersection and Harrisburg, Philadelphia, division; 16 miles between Rockville and Iroquois, Middle division; and 28 miles between Huntingdon and Elizabeth Furnace, on the Middle division. With these installations on the Philadelphia division, with the new installations on the Middle division, added to the automatic signals recently completed on the Pittsburgh division, there will be left a gap of but 77 miles (on the Middle division) on the main line between New York and Pittsburgh (but which is now protected with manual block signals) on which immediate provision has not been made for automatic signal protection, and this territory will without doubt be taken care of at an early date.

All the signals in the installations here noted will be alternating-current motor top-post mechanism; alternating current will also be used for the track circuits and for lighting the signals. The interlockings through which these automatics will run will also be thoroughly revised, approach locking and advance locking being provided and signals made semi-automatic if not already so operated.

Authorization has also been granted to complete the signaling on the Maryland division (Philadelphia, Baltimore & Washington) by the installation of 29 miles of A. C. motor top-post

automatic signals between Oakington and Bay View. This, with about 3 miles on the Union Railroad, Bay View to Biddle Street, Baltimore, will complete automatic signaling from Philadelphia to Washington.

An alternating current power line with A. C. track circuits will be installed between Holmesburg Junction and Bristol, on the New York division, a distance of ten miles, four track. All the lower quadrant signals here will be replaced by upper-quadrant top-post mechanism signals, electrically lighted. This involves changes in two large mechanical interlockings, Holmesburg Junction and Cornwells.

In connection with the new six-track work through North Philadelphia station, on the New York division, a large all-electric interlocking machine will be installed. A similar interlocking machine will also be installed at Mantua, Philadelphia Terminal division, in connection with the two additional tracks now being built across the Schuylkill River at that point.

A 31-lever electro-mechanical Union Style P interlocking machine will be installed at Monmouth Junction, New York division; and a 56-lever machine of the same style at Monmouth Street, Trenton.

A large all-electric interlocking machine will be installed at Perth Amboy Junction, New York division.

Automatic block signals will be installed on the Waverly & Passaic Branch, a freight line, New York division. These signals will be upper quadrant with low voltage D. C. motor top-post mechanism.

In connection with the new automatic signals on the Pittsburgh division the interlocking at Hillside is practically being rebuilt with No. 20 crossovers between main tracks in the running direction. All signals will be upper quadrant and the entire layout controlled by a 23-lever Union Style P electro-mechanical machine.

The construction of additional track facilities and a new interlocking is now under way at Pencader, on the Maryland division. This work requires a 23-lever electro-mechanical machine.

Electric switch and route locking will be installed at "UF," "BU" and "FX" towers, Pittsburgh Terminal. These three machines control, respectively, 131, 119, and 23 levers, electro-pneumatic.

New electric detector switch locking will be installed at Beck's Run, Monongahela division, and approach locking will be installed at Duquesne, Monongahela division, and Bennington, Pittsburgh division.

The Pennsylvania has adopted a distinctive aspect for the permissive indication in manual block signaling, and all signals not conforming to this new standard are being changed, throughout the lines east of Pittsburgh. For this aspect the signal arm has a rounded end and the face of the blade (yellow) bears a thick black ring, having an outside diameter equal to the width of the blade and an inside diameter of 5 in. With upper-quadrant three-position signals the aspects are as follows:

Indication.	Day aspect.	Night aspect.
Stop	Horizontal.	Red.
Proceed	90 deg. up.	White.
Proceed expecting to find a train in the block	45 deg. up.	Two green, side by side.
Distant Indication	Not used.	Not used.

Other details of Pennsylvania practice were given in our issue of March 8, last, page 423, when we described the work to be done in 1912.

ROLLING STOCK ON VICTORIAN RAILWAYS.—In view of the rapid increases which are now being made in the Victorian Government Railways' rolling stock, it is interesting to note that in the past 10 years the increases were relatively small. While the train mileage increased by 17 per cent., and the gross earnings by 46 per cent. between June, 1901, and June, 1911, the number of locomotives in use was increased by only 14, and the number of passenger and freight cars by 3,000. The rolling stock on June 30, 1912, consisted of 612 broad and 11 narrow gage locomotives, 1,331 broad and 21 narrow gage passenger coaches, 634 broad and 2 narrow gage box, 14,097 broad and 195 narrow gage other freight cars of all classes and sizes, and 18 broad-gage cars for the St. Kilda-Brighton electric line. It should be mentioned, however, that during this 10-year period 144 old locomotives were broken up, and that the total tractive power of the locomotives in use in June, 1912, was 9,250,000 lbs., as against 7,250,000 in 1901.—*Consular Report.*

Supply Trade News.

The Isthmian Canal Commission will receive bids until January 10 on miscellaneous supplies, including steel, iron, plate, splice bars, track frogs, switch stands, etc. Circular No. 751.

The directors of the Riehle Brothers Testing Machine Company, Philadelphia, Pa., have declared an annual dividend of 6 per cent. upon the capital stock of the company for the year 1912.

The Pullman Company has announced that the salaries of its clerical forces will be advanced on January 1, by amounts ranging from 6 to 12 per cent. The total amount of the increase will be about \$300,000 per annum.

H. E. Lavelle, formerly with the Standard Paint Company, has been made the selling and mechanical representative of the Automatic Ventilator Company, New York, for the middle-western states, with office in Indianapolis, Ind., effective January 1.

The Roberts & Schaefer Company, Chicago, has received an order from the Queen & Crescent Route for two 500-ton fireproof, main line reinforced concrete Holmen coaling stations, electrically driven, for installation at Danville, Ky., and Oakdale, Tenn. The contract price is \$37,000. These plants are to be exact duplicates of two former plants of this character and construction which this company erected for the Queen & Crescent at Montlake, Tenn., and Ludlow, Ky.

TRADE PUBLICATIONS.

CHICAGO & NORTH WESTERN.—The passenger department has issued a booklet containing diagrams of all reserved seats and boxes in the principal theaters of Chicago, for the assistance of its patrons in the selection and location of seats and the purchase of tickets.

FLORIDA EAST COAST.—The passenger department has issued a handsome illustrated booklet describing the hotels and other attractions of Florida and Cuba; also an illustrated booklet containing a reprint of the description of the Key West extension by Frank M. Patterson, taken from the *Railway Age Gazette* of May 10, 1912.

PNEUMATIC TOOLS.—The Chicago Pneumatic Tool Company has issued bulletins E-22, E-26, E-27 and 34-G, describing its heavy duty electric drills for alternating current, universal electric drills operating on direct or alternating current, heavy electric drills for direct current and air receivers, aftercoolers, drain traps, reheaters and economizers.

HEATING, REFRIGERATING AND VENTILATING CARS.—The Moore Patent Car Company of St. Paul, Minn., has issued an illustrated booklet describing its combined refrigerating, heating and ventilating cars as adopted by several important railways, with illustrations showing the operations of the principal features of the system and some comparative figures showing the economy of its use.

CHICAGO & NORTH WESTERN.—The passenger department has issued a series of attractive booklets and folders describing the new North Western Limited train which has just been provided with entirely new equipment, also an illustrated booklet describing the principal attractions on the itinerary of the Thirty-second Triennial Conclave of the Knights Templar, to be held at Denver, August 11 to 16.

NEW RHINE BRIDGE PROPOSED.—It is proposed to construct a bridge over the Rhine near Rudesheim at a cost estimated at \$2,350,000, of which Prussia would contribute \$555,000, Hesse \$480,000, and the Imperial Government the remainder. The bridge would be the largest yet built in Germany. The length would be about two-thirds of a mile, and it is contemplated that it shall carry a double railroad track and foot ways.

NEW CAR SHOPS FOR VICTORIA.—It is estimated that the new railway workshops, which are to be established almost immediately at Ballarat and Bendigo, in pursuance of the decision arrived at by the state cabinet recently, will each be capable of turning out annually about 20 locomotives and 200 cars. This will, it is contended, relieve considerably the strain to which the Newport shops are at present subjected.

Railway Construction.

ARKANSAS ROAD.—According to press reports the Progressive Association of Pleasant Plains, Ark., is back of a project to build from Pleasant Plains to either Bald Knob or to Batesville. J. E. Smith is said to be interested.

BRANTFORD & HAMILTON (Electric).—The Canadian parliament has been asked for authority to build a line from Langford, in Brantford township, Ont., via the townships of Ancaster, Beverley, South Dumfries and North Dumfries to Galt. This line is to be a subsidiary of the Dominion Power & Transmission Company, Hamilton, Ont., of which E. P. Coleman is general manager.

FAIRMONT & VEBLEN.—According to press reports this company has been organized to build a 50-mile line in North and South Dakota, at an estimated cost of \$600,000. The names of the promoters are not given.

KANSAS CITY & MEMPHIS.—A contract has been given to the W. R. Felker Construction Company, Rogers, Ark., to build a 35-mile extension east to Huntsville, of the line recently opened for operation from Cave Springs, Ark., south to Fayetteville. (Aug. 22, p. 366).

OZARK LAND & LUMBER COMPANY'S LINE.—This company, which was organized early in 1912, to develop timber land in Benton, Washington and Madison counties, Ark., has given a contract to the W. R. Felker Construction Company, Rogers, Ark., to build from Monte Ne, Ark., to War Eagle, six miles. George G. Locke, president, Rogers, Ark.

SANDY VALLEY & ELKHORN.—According to press reports an extension is to be built from Jenkins, Ky., to McRoberts. Surveys have been made.

TANANA VALLEY.—An officer writes that surveys are being made to build an extension from Chatanika, Alaska, east to Cleary City, six miles. The work will be carried out by the company's men.

TENNESSEE, KENTUCKY & NORTHERN.—This company, which operates a line from Algood, Tenn., north to Livingston, 19 miles, will build an extension, it is said, north from Livingston to Stearns, Ky., and will build another extension from Algood south to Sparta.

VIRGINIA & EASTERN CAROLINA.—This company expects to have location made soon for a line from Henderson, N. C., to either Wilson or to Rocky Mount. It is understood that bids will be asked for the work about March 1. There will be one bridge, 175 ft. long, over Tar river. J. P. Taylor, vice-president, and J. C. Cruikshank, chief engineer. M. C. Wood, Marion, S. C., and W. H. Alexander, Augusta, Ga., are incorporators.

WEST TENNESSEE TRACTION.—Rights of way have been secured and financial arrangements have been made, it is said, to build the first section of a line between Memphis, Tenn., and Arlington, 25 miles. G. C. Bennett, president; A. N. Bullitt, chief engineer, Memphis.

RAILWAY STRUCTURES.

BLOOMINGTON, ILL.—The Chicago & Alton has awarded a contract to G. B. Danielson for a new passenger station for the use of the Alton exclusively, to cost about \$75,000.

CONCORD, N. C.—Bids are now being asked for by the Southern Railway to build a new passenger station at Concord. The new station will be of brick construction with stone trimmings and tile roof. It will be 128 ft. x 32 ft. 6 in. The present passenger depot will be moved and converted into a freight office, and the improvements will also include the construction of a concrete platform, macadam driveway and track changes.

PASCO, WASH.—The Northern Pacific has begun work on a new ice house to replace one burned last August, which will be 480 ft. long by 90 ft. wide and 54 ft. high, of re-enforced concrete construction. The contract was awarded to Deeks, Deeks & Smith, of St. Paul.

Railway Financial News.

BOSTON & LOWELL.—Stockholders are to vote on January 1 on the question of authorizing \$1,000,000 4½ per cent. bonds, to be dated February 1, 1913, to refund \$1,000,000 4 per cent. bonds due February 1.

CAROLINA RAILROAD.—See Norfolk Southern.

CHICAGO, MILWAUKEE & PUGET SOUND.—This road, which is the Pacific coast extension of the Chicago, Milwaukee & St. Paul, after January 1 is to be operated as part of the Chicago, Milwaukee & St. Paul, and the C. M. & St. P. will assume all the obligations of the Puget Sound.

CHICAGO, MILWAUKEE & ST. PAUL.—See Chicago, Milwaukee & Puget Sound.

COLORADO MIDLAND.—George W. Vallery, president and general manager, with office at Denver, Colo., has been appointed receiver.

DELAWARE, LACKAWANNA & WESTERN.—The directors have voted to issue \$12,000,000 stock at par. This is the \$12,000,000 stock authorized by the stockholders last February, and is equal to 40 per cent. of the present outstanding stock. New stockholders are given the privilege of subscribing for new stock pro rata. The proceeds from the sale of the stock are to be used to pay for building a new line west of Scranton and for other capital purposes. Construction work on this new line is now under way.

DENVER, NORTHWESTERN & PACIFIC.—The trustees of the \$4,000,000 Colorado-Utah Construction Company 6 per cent. notes are to sell at auction on January 15 the \$8,000,000 first mortgage 5 per cent. bonds of the railroad company which are deposited under the notes.

FITCHBURG RAILROAD.—The New York Public Service Commission, Second District, has authorized this company to sell \$400,000 20-year 4½ per cent. bonds at par.

FORT DODGE, DES MOINES & SOUTHERN.—The federal court has authorized the abandonment of the road between Des Moines Junction and Goddard, Iowa, 27 miles, and this portion of the road is to be sold for junk.

INTERSTATE RAILROAD.—This Virginia company has bought the Wise Terminal Company, the securities of which were sold at auction on October 30. The Wise Terminal Company has a road running from Stonega to Norton, Va., 16 miles.

KINSTON-CAROLINA.—See Norfolk Southern.

KINSTON & SNOW RIVER.—See Norfolk Southern.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—The committee who have been considering the refinancing of the \$6,300,000 first mortgage 7 per cent. bonds, due July 1, 1913, have recommended an increase in the stock, and stockholders are to vote on February 12 on the question of increasing the stock from \$10,000,000 to \$16,000,000.

NORFOLK SOUTHERN.—The Kinston & Snow River and the Kinston-Carolina have been consolidated as the Carolina Railroad, and the stock of the new company is to be owned by the Roper Lumber Co., which is a subsidiary of the Norfolk Southern. The Kinston & Snow River runs from Kinston to Snow Hill, N. C., 15 miles, and the Kinston-Carolina runs from Kinston to Pink Hill, N. C., 20 miles.

NORTHERN SECURITIES.—A dividend of 2 per cent. has been declared, payable January 11. Three per cent. was paid in 1912 and 4 per cent. in 1911.

PITTSBURGH & SUSQUEHANNA.—A. H. Pahn, of Philadelphia, has been appointed receiver, the coupons due November 1, 1912, on the 5 per cent. bonds being in default.

ROSCOE, SNYDER & PACIFIC.—The Texas railroad commission has authorized the company to issue new first refunding 5 per cent. bonds to retire the outstanding funded debt.

SAN ANTONIO, UVALDE & GULF.—This company, according to a press despatch from Uvalde, Tex., is making preparations to authorize an issue of bonds. The road has been financed heretofore through the Bankers Trust Company of St. Louis.

ANNUAL REPORT

UNION PACIFIC RAILROAD COMPANY—FIFTEENTH ANNUAL REPORT.

INCOME FOR THE YEAR.

The gross revenues and expenses of the Union Pacific Railroad and Auxiliary Companies, after excluding all offsetting accounts between them, were as follows:

	THIS YEAR.	LAST YEAR.	+INCREASE. —DECREASE.
Average miles of railway operated during the year.....	7,149.87	6,678.29	+ 471.58
OPERATING INCOME.			
Gross operating revenues—rail lines.....	\$84,180,096.67	\$87,201,971.38	—\$3,021,874.71
Gross revenues—outside operations.....	1,797,512.11	1,781,136.43	+ 16,375.68
Total.....	\$85,977,608.78	\$88,983,107.81	—\$3,005,499.03
Operating expenses—rail lines.....	\$48,533,320.24	\$47,907,772.31	+ \$625,547.93
Expenses—outside operations.....	1,856,086.68	1,900,061.68	— 43,975.00
Taxes.....	4,368,788.61	3,464,147.20	+ 904,641.41
Total.....	\$54,758,195.53	\$53,271,981.19	+ \$1,486,214.34

Net operating income..... \$31,219,413.25 \$35,711,126.62 —\$4,491,713.37

OTHER INCOME.

Interest on bonds owned of companies other than Oregon Short Line Railroad and Oregon-Washington Railroad and Navigation Cos. (Table 15).....	\$1,834,019.58	\$1,392,509.01	+ \$441,510.57
Dividends on stocks owned of companies other than Oregon Short Line Railroad and Oregon-Washington Railroad and Navigation Cos. (Table 16).....	14,651,247.50	14,596,701.50	+ 54,546.00
Balance of interest on loans and on open accounts other than with Auxiliary Companies.....	2,211,975.97	2,016,541.69	+ 195,434.28
Rentals for lease of road, for joint tracks, yards, and terminal facilities—balance.....	.....	243,360.65	— 243,360.65
Rentals from steamships.....	101,600.00	304,800.00	— 203,200.00
Net income from lease of unplugged lands and town lots.....	35.40	26.54	+ 8.86
Miscellaneous income.....	97,625.84	89,650.10	+ 7,975.74
Total other income.....	\$18,896,504.29	\$18,643,589.49	+ \$252,914.80

Total net operating income and other income..... \$50,115,917.54 \$54,354,716.11 —\$4,238,798.57

FIXED AND OTHER CHARGES.

Interest on funded debt in hands of the public (Table 14).....	\$14,068,703.54	\$12,623,281.83	+ \$1,445,421.71
Sinking fund requirements.....	12,013.33	12,013.33	.....
Hire of equipment—balance.....	1,930,118.08	1,742,562.63	+ 187,555.45
Rentals for lease of road, for joint tracks, yards, and terminal facilities—balance.....	39,841.88	.....	+ 39,841.88
Miscellaneous expenses.....	25,247.35	1,097.27	+ 24,150.08
Total fixed and other charges.....	\$16,075,924.18	\$14,378,955.06	+ \$1,696,969.12
Surplus over fixed and other charges.....	\$34,039,993.36	\$39,975,761.05	—\$5,935,767.69

Application of Surplus.

Dividends on stocks of Union Pacific Railroad Co.:			
4 per cent. on preferred stock.....	\$3,981,744.00	\$3,981,744.00	.....
10 per cent. on common stock.....	21,664,738.57	21,659,571.51	+ \$5,167.06
	\$25,646,482.57	\$25,641,315.51	+ \$5,167.06

Surplus after payment of dividends..... \$8,393,510.79 \$14,334,445.54 —\$5,940,934.75

The results of the year's operations, compared with those of the preceding year, were as follows:

	INCREASE.	DECREASE.	PER CENT.
Average miles of railway operated.....	471.58	.....	7.06
Gross operating income.....	.....	\$3,005,499.03	3.38
Operating expenses and expenses outside operations.....	\$581,572.93	.....	1.17
Taxes.....	904,641.41	.....	26.11
Net operating income.....	.....	4,491,713.37	12.58
All other income.....	252,914.80	.....	1.37
Total net operating income and other income.....	.....	4,238,798.57	7.80
Interest on funded debt and other charges.....	1,696,969.12	.....	11.80
Surplus over fixed and other charges.....	.....	5,935,767.69	14.85

ASSETS AND LIABILITIES.

The assets and liabilities of the Union Pacific Railroad and Auxiliary Companies are shown in detail in Table No. 4. The securities owned are stated after eliminating all offsetting accounts between the companies, thus dealing only with the securities in the hands of the public, the assets collectible from the public, and the liabilities payable to the public.

The increase or decrease in assets or liabilities since last report, briefly stated, is as follows:

INCREASE IN ASSETS:

Property investment as detailed under Capital Expenditures.....	\$13,622,196.46
Stocks and bonds acquired or disposed of as detailed in Tables 8, 9 and 10:	
Stocks acquired.....	\$148,267.01
Bonds acquired.....	26,875,470.00
	\$27,023,737.01

Less:

Stocks sold.....	\$698,216.50
Bonds sold.....	6,500.83
	704,717.33
Balance, stocks and bonds.....	\$26,319,019.68
Demand and time loans and deposits.....	15,935,693.41
Current cash accounts.....	215,616.36
Due from Proprietary Companies.....	345,677.22
Purchase Money Notes—S. S. "Mongolia" and "Manchuria".....	3,871,875.00
Purchase Money Notes—S. S. "Bear" and "Beaver".....	1,100,000.00

Deduct for decrease in:

Demand loans to Southern Pacific Co.	\$8,007,305.41
Loans to San Pedro, Los Angeles & Salt Lake R. R. Co.	1,168,860.00
Loans to Utah Light & Ry. Co.	8,533.80
Cash on hand.....	5,053,959.31
Material, fuel and supplies.....	811,519.66
Contingent unadjusted accounts.....	967,318.91
	16,017,497.09

\$31,770,384.58

Net increase in assets.....

\$45,392,581.04

INCREASE IN LIABILITIES:

Capital stock.....	\$16,500.00
Funded debt.....	14,743,625.00
	\$14,760,125.00
Southern Pacific Co. for bonds purchased.....	\$23,740,362.22
Current cash accounts.....	430,417.66
Due to Proprietary Companies.....	392,637.21

Deduct for decrease in:

Reserve for depreciation on steamships and miscellaneous property.....	\$1,023,777.10
Contingent and unadjusted accounts.....	538,021.91
	\$1,561,799.01
	23,001,618.08

Net increase in liabilities.....

\$37,761,743.08

Increase of assets in excess of increase in liabilities (gain in Profit and Loss).....

\$7,630,837.96

The ocean steamships "Mongolia" and "Manchuria" were sold on November 1, 1911, to the Pacific Mail Steamship Company for \$4,212,783.70, the remainder of the cost of said ships after deducting therefrom \$1,035,163.79 received in the charter hire collected for account of depreciation and other adjustments. In payment of \$4,200,000 of the purchase price, and the interest accruing thereon, the Oregon Short Line Railroad Company accepted sixty-four notes of \$102,544.42 each, dated November 1, 1911, payable quarterly, on February 1, May 1, August 1 and November 1 of each year, secured by mortgage on the steamers. The purchaser has the option to pay any of these notes prior to their maturity at their present worth on the date of redemption.

The ocean steamships "Bear" and "Beaver" were sold, on June 1, 1912, to the San Francisco and Portland Steamship Company for the sum of \$1,100,000, evidenced by twenty notes of \$55,000 each, dated June 1, 1912, due June 1, 1932, bearing interest payable semi-annually on all outstanding notes. The purchaser has the option to pay any of these notes prior to their maturity. The Oregon-Washington Railroad and Navigation Company is the owner of the entire outstanding capital stock of this steamship company.

CAPITAL EXPENDITURES.

The expenditures for capital account excluding the cost of stocks and bonds acquired in companies other than the Union Pacific Railroad and Auxiliary Companies, after deducting proceeds from sale of steamships and other items, amounted to \$13,622,196.46, and were as follows:

Union Pacific Railroad Company:

Extensions and branches, viz.:	
Callaway to Gandy, Nebraska.....	\$669,773.08
Northport to Gering, Nebraska.....	394,511.46
Onaga to Marysville, Kansas.....	3,438.32
Dent to Fort Collins, Colorado.....	149,175.68
Sand Creek to St. Vrain, Colorado.....	70,704.91
	\$1,287,604.45

Credits:

O'Fallons to Northport, Nebraska.....	\$1,951.03
Rock Springs to Coal Fields, Wyoming..	7,820.96
Cloverly to Hungerford, Colorado.....	11,094.76
Grants Mine to La Salle, Colorado.....	3,092.06
Greeley Junction to Briggsdale, Colorado	2,187.53
	26,146.34

Oregon Short Line Railroad Company:

\$1,261,458.11

Extensions and branches, viz.:

Ashton to Driggs, Idaho.....	\$551,482.70
Burley to Oakley, Idaho.....	31,946.64
Caldwell to Mile Post Eleven, Idaho.....	16,470.27
Montpelier to Paris, Idaho.....	17,158.79
Moreland to Aberdeen, Idaho.....	7,947.09
Nyssa to Homedale, Idaho.....	417,572.03
Rupert to Bliss, Idaho.....	143,076.46
St. Anthony to Yellowstone, Idaho.....	33.40
Twin Falls to Rogerson, Idaho.....	1,347.86

\$1,187,035.24

Adjustment in accounts taken over under reorganization...

11,215.62

Oregon-Washington Railroad & Navigation Company:

Extensions and branches, viz.:	
Centralia to Hoquiam, Washington.....	\$137,844.06
Coyote to Stanfield, Oregon.....	3,900.75
Cosmopolis to Primo, Washington.....	136,804.03
Midvale to Sunnyside, Washington.....	9,537.49
Portland, Oregon, to Seattle, Washington,	
North of Columbia River.....	582,502.78

\$1,198,250.86

Portland, Oregon, to Seattle, Washington, South of Columbia River	61,704.97	
South Montezano to Montezano, Washington	4,953.57	
Spokane Terminals, Washington	592,821.48	
Spokane to Ayer, Washington	4,460,108.72	
Attalia to North Yakima, Washington	155,137.39	
Vale to Odell, Oregon	328,304.89	
Preliminary surveys and reconnaissance	6,606.07	
Credits:		
Blakes, Oregon, to Lewiston, Idaho	\$4,423.91	
Vale to Brogan, Oregon	733.42	
St. Johns to Troutdale, Oregon	24,900.82	
		\$6,480,226.20
Other expenditures		30,058.15
		\$6,450,168.05
Des Chutes Railroad Company:		68,314.72
Expenditures during the year		\$6,518,482.77
Expenditures prior to July 1, 1911, transferred from "Advances for construction and acquisition of new lines"		\$120,712.59
		5,647,606.23
		\$5,768,318.82
Expenditures for Additions and Betterments (Table No. 24), viz.:		
Roadway, Track and Appurtenances:		
Ballast	\$37,367.80	
Bridges, trestles, culverts and grade cross- ings	1,137,283.19	
Changes in line, revision of grades, widening embankments, and tunnel improvements	617,908.52	
Increased weight of rails, improved frogs and switches, track fastenings and ap- purtenances	114,680.49	
Interlocking block, and highway crossing signals	30,197.59	
Second main track	2,017,203.75	
Real estate, right-of-way and station grounds, and fencing right-of-way	110,232.38	
Sidings and passing tracks	319,289.73	
Telegraph and telephone lines	29,630.85	
		\$4,413,794.30
Buildings, Structures and Appurtenances:		
Enginehouses, shops, machinery, tools, etc.	\$560,368.58	
Roadway buildings, machinery, tools, etc.	6,468.06	
Station buildings, terminal yards, and ap- purtenances	190,681.85	
Water and fuel stations	136,887.89	
Other buildings—general service	555,177.14	
		1,449,583.52
Equipment:		
29 passenger-train cars	\$161,638.65	
496 freight-train cars	518,888.08	
376 work equipment	104,758.61	
		\$785,285.34
Additional cost of equipment purchased last year	24,592.68	
Improvements to existing equipment	52,055.44	
		861,933.46
		\$6,725,311.28
Less:		
19 passenger-train, 869 freight-train, 309 work equipment cars, and 2 river steam- ers vacated during the year	\$798,289.84	
Cost of property originally charged to "Additions and Betterments" abandoned during the year, not to be replaced	281,396.15	
		1,079,685.99
		\$5,645,625.29
Deduct for:		
Amount received from the Trustee of the Union Pacific Railroad Company's First Railroad and Land Grant Mortgage, in-pay- ment for expenditures for additions, better- ments and improvements, etc., not otherwise provided for	\$1,000,000.00	
Received from Receivers Union Pacific Rail- way in settlement of reorganization ac- counts	481.16	
Transferred to other accounts	6,522.55	
		1,007,003.71
		\$19,385,132.14
Total "Cost of railways, equipment, and appurte- nances"		832,855.38
Terminal property and other lands		1,193,392.17
Rolling stock		\$21,411,379.69
Deduct for:		
Advances for the construction of the Des Chutes Railroad Company prior to July 1, 1911, transferred to "Cost of railways, equipment, and appurtenances"	\$5,647,606.23	
Less: Advances for the construction and ac- quisition of new lines	4,050,285.92	
		1,597,320.31
		\$19,814,059.38
Balance		6,191,862.92
Ocean steamships "Manchuria," "Mongolia," "Bear," and "Beaver" sold		\$13,622,196.46
Increase during the year in charges to Property investment		

EQUIPMENT.

The original cost, salvage value, and amount charged to the operating expenses of the equipment retired during the year were as follows:

	TOTAL.	PASSENGER- TRAIN CARS.	FREIGHT- TRAIN CARS.	WORK EQUIPMENT.
Original cost (estimated if not known)	\$783,678.84	\$128,142.08	\$517,987.42	\$137,549.34
Proceeds from sale or salvage value	272,493.55	75,501.65	151,712.10	45,279.80
Charged to operating ex- penses	\$511,185.29	\$52,640.43	\$366,275.32	\$92,269.54

The changes in the equipment during the year were as follows:

	CONDEMNED, DESTROYED, SOLD OR TRANSFERRED TO ANOTHER CLASS AND CREDITED TO "EQUIPMENT." Number.	ADDED BY PURCHASE AND CHARGED TO "EQUIP- MENT." Number.	OWNED BY UNION PACIFIC EQUIP- MENT ASSO- CIATION. Number. (a) 1	TOTAL. Number. (b) 1
Locomotives .....	...	...	...	...
Baggage cars	3	20	*11	9
Baggage and mail cars .....	...	1	5	6
Baggage and passenger cars .....	...	2	...	2
Business cars	1	2	1	3
Chair cars	3	...	9	9
Motor cars (gasoline) .....	...	...	5	5
Motor car trailers .....	...	...	1	1
Passenger cars	2	...	47	47
Postal cars	10	...	...	...
Narrow gauge cars .....	...	4	...	4
Total passenger-train cars	(c) 19	(d) 29	(e) 57	(f) 86
Ballast cars .....	...	346	*348	*2
Box cars	528	142	108	250
Box automobile cars .....	...	7	*8	*1
Caboose cars	9	...	...	...
Flat cars	7	...	...	...
Furniture cars	125	...	...	...
Gondola cars	131	1	...	1
Gondola (D. B.) cars	3	...	...	...
Refrigerator cars	10	...	...	...
Stock cars	56	...	...	...
Total freight-train cars	(g) 869	(h) 496	(i) *248	(j) 248
Work equipment	(k) 309	(l) 376	(m) *1	(n) 375

(a) The cost of this locomotive was \$24,408.24.
(b) The cost of this locomotive was \$24,408.24.
(c) The original cost of these 19 passenger-train cars was \$128,142.08.
(d) The cost of these 29 passenger-train cars was \$161,638.65.
(e) The cost of these 57 passenger-train cars was \$796,910.94.
(f) The cost of the total 86 passenger-train cars was \$958,549.59.
(g) The original cost of these 869 freight-train cars was \$517,987.42.
(h) The cost of these 496 freight-train cars was \$518,888.08.
(i) The cost of these 248 freight-train cars was \$267,727.62.
(j) The cost of the total 248 freight-train cars was \$251,160.46.
(k) The original cost of these 309 pieces of work equipment was \$137,549.34.
(l) The cost of these 376 pieces of work equipment was \$104,758.61.
(m) The cost of this piece of work equipment was \$5,904.74.
(n) The cost of the total 375 pieces of work equipment was \$98,853.87.
The total original cost of all the equipment condemned, destroyed, sold or transferred to another class and credited to "equipment" was \$783,678.84.
The total cost of all equipment added by purchase and charged to "equipment" was \$785,285.34.
The total net cost of all equipment owned by the Union Pacific Equipment Association was \$547,686.82.
The grand total cost was \$1,332,972.16.
*Credit—Sold to Union Pacific Railroad, Oregon Short Line Railroad and Oregon-Washington Railroad & Navigation Companies; includes also 1 ballast car and 1 box automobile car destroyed.
The number of locomotives and cars of standard gauge owned and the total and the average capacity of freight-train cars at the close of the year were as follows:

	THIS YEAR.	LAST YEAR.	+INCREASE, —DECREASE.	PER CENT.
STANDARD GAUGE.				
Locomotives	1,325	1,324	+	1 .08
Total weight, excluding tender (tons)	117,613	117,486	+	127 .11
Average total weight, excluding tender (tons)	88.76	88.74	+	.02 .02
Total weight on drivers (tons)	95,619	95,504	+	115 .12
Average total weight on drivers (tons)	72.17	72.13	+	.04 .06
Passenger-train cars	1,011	948	+	63 6.65
Freight-train cars	30,165	30,786	—	621 2.02
Total capacity (tons)	1,265,311	1,276,546	—	11,235 .88
Average capacity (tons)	42.67	42.18	+	.49 1.16
Work equipment	3,958	3,892	+	66 1.70

The equipment owned by the respective companies is shown in Table No. 23. The changes during the year, the capacity, and the service of all equipment are shown in Tables Nos. 29, 30 and 31.

TRANSPORTATION OPERATIONS.

The results of the year's transportation operations compared with those of the preceding year are as follows:

	THIS YEAR.	LAST YEAR.	INCREASE OR DECREASE.	PER CENT.
Average miles of railway operated	7,149.87	6,678.29	471.58	7.06
OPERATING INCOME.				
Freight	\$57,483,557.90	\$59,964,363.73	—\$2,480,805.83	4.14
Passenger	20,207,257.26	20,981,404.90	—774,147.64	3.69
Mail	2,877,129.07	2,881,504.43	—4,375.36	.15
Express	1,982,749.91	1,756,234.83	226,515.08	12.90
Other transportation rev- enues	932,795.89	937,375.28	—4,579.39	.49
Revenues from operations other than transportation	696,606.64	681,088.21	15,518.43	2.28
Total, rail lines	\$84,180,096.67	\$87,201,971.38	—\$3,021,874.71	3.47
Revenues—outside opera- tions	1,797,512.11	1,781,136.43	16,375.68	.92
Total gross operating income	\$85,977,608.78	\$88,983,107.81	—\$3,005,499.03	3.38

OPERATING EXPENSES.				
Maintenance of way and structures	\$9,594,538.34	\$10,445,203.37	—\$850,665.03	8.14
Maintenance of equipment	9,812,175.09	9,208,724.95	603,450.14	6.55
Traffic expenses	2,119,603.04	2,021,491.93	98,111.11	4.85
Transportation expenses	24,755,109.06	23,991,335.10	763,773.96	3.18
General expenses	2,251,894.71	2,241,016.96	10,877.75	.49
Total, rail lines	\$48,533,320.24	\$47,907,772.31	\$625,547.93	1.31
Expenses—outside operations	1,856,086.68	1,900,061.68	—43,975.00	2.31
Total operating expenses	\$50,389,406.92	\$49,807,833.99	\$581,572.93	1.17
Net operating income	\$35,588,201.86	\$39,175,273.82	—\$3,587,071.96	9.16

FREIGHT TRAFFIC. (Commercial Freight Only—Way-bill Tonnage.)				
Tons of freight carried	14,980,793	14,807,161	173,632	1.17
Tons of freight carried one mile	5,710,324,140	5,803,802,346	—93,478,206	1.61
Revenue per mile of road	\$7,901.35	\$8,716.88	—\$815.53	9.36
Revenue per revenue train mile	\$4.20	\$4.43	—\$0.23	5.19
Average revenue per ton per mile .....	.989 cents	1.003 cents	—0.014 cents	1.40
Average distance carried	381.18 miles	391.96 miles	—10.78 miles	2.75

PASSENGER TRAFFIC.				
Revenue passengers carried	8,721,379	8,574,527	146,852	1.71
Revenue passengers carried one mile	898,779,794	934,002,700	—35,222,906	3.77
Revenue from passenger trains per mile of road	\$3,505.96	\$3,836.18	—\$330.22	8.61
Revenue from passenger trains per revenue train mile	\$1.41	\$1.48	—\$0.07	4.73
Average revenue per passenger per mile	2.198 cents	2.199 cents	—0.001 cents	.05
Average distance carried	103.05 miles	108.93 miles	—5.88 miles	5.40

(a) Revenue freight train and all mixed train miles.
(b) Revenue passenger train and all mixed train miles including miles run by motor cars.

Compared with the preceding year, the per cent. of operating expenses (including expenses of outside operations) to the gross operating revenues (including revenues from outside operations) was as follows:

	RAIL LINES ONLY.		RAIL LINES AND OUTSIDE OPERATIONS.	
	This Year.	Last Year.	This Year.	Last Year.
For "Maintenance" (Maintenance of Way and Structures, and Maintenance of Equipment)	23.05	22.54	.....	.....
For "Operation" (Traffic Expenses, Transportation Expenses, and General Expenses)	34.60	32.40	.....	.....
Total	57.65	54.94	58.61	55.97

MILES OF FIRST AND ADDITIONAL MAIN TRACKS OPERATED, AND MAINTAINED.				
	TOTAL.	90 LB.	85 LB.	80 LB.
Main line	4,504.87	1,806.82	32.68	1,425.75
Branches	3,274.79	22.14	1.41	97.78
Total	7,779.66	1,828.96	34.09	1,523.53
Per cent. of total miles of track	100.00	23.51	.44	19.58
Per cent. last year	100.00	22.01	.45	20.25

The details of the operating revenues and operating expenses are shown in Table No. 25, and the details of passenger and freight traffic in Tables Nos. 27 and 28.

A large part of the decrease in the gross Operating Income resulted from the partial failure of crops in sections of the territory traversed by the lines of the Union Pacific, from the diminution in passenger travel incident thereto and from the decrease in the movement of commodities used in manufacturing and building operations. There was a slight increase in the number of tons of freight and the number of passengers carried resulting entirely from the additional miles of road operated, but there was a shrinkage in the volume of traffic moved of 8.10 per cent. in freight and of 10.12 per cent. in passengers. There was also a considerable loss of revenue from the reduction in rates.

Although Operating Expenses were closely watched and reduced wherever possible without lowering the standards of efficiency and service to the public, they increased \$625,547.93, or 1.31 per cent., notwithstanding a reduction of \$3,021,874.71, or 3.47 per cent., in operating income. There was a decrease of \$247,214.89, or 1.26 per cent., in expenses for "Maintenance," but an increase in expense for "Operations" of \$872,762.82, or 3.09 per cent. This increase resulted from 633,905, or 3.47 per cent., more miles run by locomotives and motor cars in passenger service, and of 349,371, or 2.37 per cent., more miles run by locomotives in freight service—the result mainly of an increase over last year of 471.58, or 7.06 per cent., miles of additional road operated—from additional expenses imposed by the requirements of the "Hours of Service" and "Full Train Crew" laws; from higher wage schedules, from expenses incident to strike of the shopmen and from an increase in Traffic Expenses and in General Expenses. There were in service 32 gasoline motor cars. The mileage of these cars, 777,050 miles, or 4.79 per cent. of the total revenue passenger train mileage is included in the mileage statistics.

In the following statements the details of operating expenses have been combined under titles of accounts to present the year's expenses in concise form:

MAINTENANCE OF WAY AND STRUCTURES.

	THIS YEAR.	LAST YEAR.	INCREASE OR DECREASE.	PER CENT.
Average miles of railway operated and maintained—first and additional main tracks	7,943.38	7,298.30	645.08	8.84
Ballast	\$72,271.65	\$61,327.57	\$10,954.08	17.86
Ties	1,604,665.43	1,741,332.70	—136,667.27	7.85
Rails	165,905.51	245,218.70	—79,313.19	32.34
Frogs, switches and other track material	475,322.40	790,243.87	—314,921.47	39.85

Total material, roadway and track				
Repairs of roadway and track	\$2,318,174.99	\$2,838,122.84	—\$519,947.85	18.32
Bridges, trestles, and culverts	3,648,834.13	4,007,725.26	—358,891.13	8.95
Buildings, grounds and appliances	692,169.00	980,787.10	—288,618.10	29.43
Snow and sand fences and snow sheds	1,432,032.36	1,505,716.36	—73,684.00	4.89
Electric power, telegraph and telephone lines	15,409.62	17,980.46	—2,570.84	14.40
Superintendence	84,265.98	119,525.38	—35,259.40	29.50
Stationery and printing	707,152.52	630,933.73	76,218.79	12.08
Other expenses	32,623.97	36,122.25	—3,498.28	.97
Changes in line	72,886.46	58,955.26	13,931.20	23.63
Total	\$9,594,538.34	\$10,445,203.37	—\$850,665.03	8.14

Cost per mile—all main tracks operated and maintained				
	\$1,207.87	\$1,431.18	—\$223.31	15.60

There is a large charge to the year's expenses for changes in line. This charge, \$590,989.31, is the difference between the entire cost incurred in making these changes less the amount of such improvements which is under the Interstate Commerce Commission accounting regulations, chargeable to "Additions and Betterments." Of the amount charged there was expended on the lines of the Union Pacific Railroad \$110,877.96, on the Oregon Short Line Railroad \$225,595.79, and on the lines of the Oregon-Washington Railroad and Navigation Company \$254,515.56. The unusually severe winter, followed by heavy floods in the spring, also added to the expenses about \$225,000.

The following rails, ties, tie plates, and continuous rail joints were used in making renewals and the entire cost thereof was charged to operating expenses, with the exception of \$114,680.49 for increased weight of rails and improved frogs and switches charged to additions and betterments, as required by the accounting regulations of the Interstate Commerce Commission:

	THIS YEAR.	LAST YEAR.	DECREASE.
Miles of new steel rails	172.62	287.24	114.62
Per cent. of renewal of all rails in track including sidings	1.74	3.01	1.27
Number of burnettized ties	1,118,411	1,341,232	222,821
Number of other ties	901,875	941,253	39,378
Total number of ties	2,020,286	2,282,485	262,199
Equal to miles of continuous track	726.98	818.98	92.00
Per cent. of renewal of all ties in track including sidings	7.31	8.59	1.28
Number of tie plates	763,497	1,558,832	795,335
Equal to miles of continuous track	137.37	279.66	142.29
Number of continuous rail joints (single pieces)	86,223	179,598	93,375
Equal to miles of continuous track	136.16	280.62	144.46

At the timber-treating plants of the Companies, 1,101,127 cross-ties and 28,555 switch-ties were burnettized, and 97,042 cubic feet of piling and other timber were crosstied.

The weight of rails per yard in main line and branches at the close of the year was as follows:

	75 LB.	70 LB.	67 LB.	65 LB.	62 LB.	60 LB.	56 LB.	LESS THAN 56 LB.
612.38	524.25	.....	98.07	.....	4.01	.75	.16	
407.96	782.15	29.85	2.78	28.62	1,114.39	582.77	204.94	
1,020.34	1,306.40	29.85	100.85	28.62	1,118.40	583.52	205.10	
13.12	16.79	.38	1.30	.37	14.37	7.50	2.64	
13.27	16.18	.40	1.35	.30	15.07	7.89	2.83	

TRANSPORTATION EXPENSES.

	THIS YEAR.	LAST YEAR.	INCREASE OR DECREASE.	PER CENT.
Locomotives, fuel for	7,615,814.54	\$7,776,415.11	—\$160,600.57	2.07
Locomotive service, other than fuel	5,594,786.70	5,207,384.40	387,402.30	7.44
Train service	4,223,011.58	3,895,415.09	327,596.49	8.41
Station and terminal service	4,754,512.15	4,694,578.08	59,934.07	1.29
Ferry and river service	12,567.28	14,056.97	—1,489.69	10.60
Injuries, loss, damage, and other casualties	1,316,051.72	1,173,560.75	142,490.97	11.29
Superintendence	990,405.98	994,193.71	—3,787.73	.38
Stationery and printing	169,392.60	198,757.34	—29,364.74	14.77
Other expenses	78,566.51	36,973.65	41,592.86	112.49
Total	\$24,755,109.06	\$23,991,335.10	\$763,773.96	3.18

The decrease in fuel for locomotives resulted entirely from a reduction in the price of fuel on the lines of the Oregon-Washington Railroad & Navigation Co. The increase in locomotive and train service resulted principally from higher wage schedules, requirements of the "Hours of Service" and "Full Train Crew" laws, and from an increase of 765,671 miles run by locomotives in transportation service.

The operations of the transportation department of the rail lines compare with those of last year as follows:

	INCREASE.	DECREASE.	PER CENT.
Total operating revenues	\$3,021,874.71	.....	3.47
Transportation expenses	\$763,773.96	.....	3.18
Tons of commercial freight carried one mile	93,478,206	.....	1.61
Tons of commercial and company freight carried one mile	37,949,058	.....	.52
Mileage of cars in freight service, including caboose	5,170,224	.....	1.15
Locomotive mileage with freight and mixed trains, including helping	349,371	.....	2.37
Revenue passengers carried one mile	35,222,906	.....	3.77
Mileage of cars in passenger service	4,516,758	.....	4.36
Mileage of motor cars	150,070	.....	23.94
Locomotive mileage with passenger and mixed trains, including helping	483,835	.....	2.73
Total locomotive mileage in service for which the attendant expenses are charged to "Transportation Expenses"	765,671	.....	2.14

The average number of tons of freight per train (ton miles per revenue freight train and all mixed train miles), and loaded cars per train (excluding caboose), and the tons per loaded car for the respective companies for the year were:

Balance to credit of profit and loss (Table No. 3)...	\$194,545,768.76	\$186,914,930.80	\$7,630,837.96
Total liabilities	\$914,840,149.13	\$869,447,568.09	\$45,392,581.04

*Given for the bonds purchased referred to on page 10.

UNION PACIFIC RAILROAD AND AUXILIARY COMPANIES.
NO. 5.—RECEIPTS AND EXPENDITURES FROM ALL SOURCES
FOR THE YEAR ENDED JUNE 30, 1912.

<i>Capital Expenditures.</i>			
Construction of extensions and branches.....	\$9,019,373.99		
Additions and betterments.....	5,645,625.29		
Expenditures for construction and acquisition of new lines, terminal property and other lands, and for rolling stock...	6,076,533.47		
Miscellaneous expenditures and adjustments.....	79,530.34		
	\$20,821,063.09		
Deduct for:			
Receipts from Improvement and Equipment Fund and from Receivers of U. P. Ry.....	\$1,000,481.16		
Ocean steamships sold.....	6,191,862.92		
Transferred to other accounts.....	6,522.55		
	\$7,198,866.63		
	\$13,622,196.46		
<i>Increase in Assets.</i>			
Stocks and bonds.....	\$26,319,019.68		
Demand and time loans and deposits.....	15,935,693.41		
Current cash accounts.....	215,616.36		
Due from Proprietary Companies.....	345,677.22		
Principal of purchase money notes—S. S. "Mongolia" and "Manchuria".....	3,871,875.00		
Principal of purchase money notes—S. S. "Bear" and "Beaver".....	1,100,000.00		
	\$47,787,881.67		
Less decrease:			
Demand loans to Southern Pacific Co.....	\$8,007,305.41		
Loans to San Pedro, Los Angeles & Salt Lake R. R. Co. and Utah Light and Railway Co.....	1,177,393.80		
Cash.....	5,053,959.31		
Material, fuel, and supplies.....	811,519.66		
Contingent unadjusted accounts.....	967,318.91		
	\$16,017,497.09		
	\$31,770,384.58		
Total	\$45,392,581.04		

*Depreciation amounting to \$1,023,677.62 carried per contra in "Reserve for depreciation" was deducted from this cost in the purchase price of the ships.

RECEIPTS.

<i>Capital Liabilities.</i>			
U. P. R. R. Co. common stock issued in exchange for Twenty Year Four Per Cent. Convertible Bonds retired and cancelled.....	\$16,500.00		
O. W. R. R. & N. Co. First and Refunding Four Per Cent. Bonds sold	14,775,000.00		
	\$14,791,500.00		
Deduct for:			
U. P. R. R. Co. Twenty Year Four Per Cent. Convertible Bonds retired and cancelled.....	\$28,875.00		
O. S. L. R. R. Co. Income "A" Bonds acquired.....	2,500.00		
	\$31,375.00		
	\$14,760,125.00		
<i>Increase in Liabilities.</i>			
Southern Pacific Co. bond purchase notes.....	\$23,740,362.22		
Current cash accounts.....	430,417.66		
Due to Proprietary Companies.....	392,637.21		
	\$24,563,417.09		
Less decrease:			
Reserve for depreciation on steamships sold, written off, and on miscellaneous property.....	\$1,023,777.10		
Contingent unadjusted accounts.....	538,021.91		
	\$1,561,799.01		
	\$23,001,618.08		
<i>Profit and Loss.</i>			
Gross operating revenues.....	\$85,977,608.78		
Interest, dividends and other income.....	19,234,845.09		
Profit on Northern Securities Co. Stubs sold.....	171,518.52		
Difference between \$28,875 face value U. P. R. R. Co. Twenty Year Four Per Cent. Convertible Bonds retired and cancelled, and \$16,500 par value common stock issued in exchange therefor	12,375.00		
Other profit and loss credits.....	291,004.91		
Total receipts	\$105,687,352.30		
Deduct for:			
Operating expenses	\$50,389,406.92		
Taxes	4,368,788.61		
Interest on funded debt and other fixed charges.....	16,075,924.18		
Dividends on preferred and common stocks.....	25,646,482.57		
Discount, commission, and expenses on bonds sold.....	1,382,542.50		
Other profit and loss charges.....	193,369.56		
Total expenditures	\$98,056,514.34		
	\$7,630,837.96		
Total	\$45,392,581.04		

UNION PACIFIC RAILROAD AND AUXILIARY COMPANIES.
NO. 26.—GENERAL OPERATING RESULTS FOR THE YEAR ENDED
JUNE 30, 1912.

	THIS YEAR.	LAST YEAR.	INCREASE OR DECREASE.	PER CENT.
Ave. miles of rail. oper.	7,149.87	6,678.29	471.58	7.06
OPERATING INCOME AND EXPENSES.				
<i>(Rail Lines and Outside Operations.)</i>				
Gross operating income.....	\$85,977,608.78	\$88,983,107.81	—\$3,005,499.03	3.38
Gross oper. expenses.....	50,389,406.92	49,807,833.99	581,572.93	1.17
Net operating income.....	35,588,201.86	39,175,273.82	—3,587,071.96	9.16
Ratio of ex. to gr. rev.....	58.61	55.97	2.64	4.72
<i>(Rail Lines Only.)</i>				
Total operating income.....	84,180,096.67	87,201,971.38	—3,021,874.71	3.47
Operating expenses	48,533,320.24	47,907,772.31	625,547.93	1.31
Net operating income.....	35,646,776.43	39,294,199.07	—3,647,422.64	9.28
Ratio of op. ex. to tl. op. inc.....	57.65	54.94	2.71	4.93
Op. inc. per m. of road.....	11,773.65	13,057.53	—1,283.88	9.83
Op. ex. per m. of road.....	6,788.00	7,173.66	—385.66	5.38
Net op. inc. per m. of road.....	4,985.65	5,883.87	—898.22	15.27
Op. inc. per rev. tr. m. (a).....	2.84	3.00	—0.16	5.33
Op. ex. per rev. tr. m. (a).....	1.64	1.65	—0.01	.61
Net op. inc. per rev. tr. m. (a).....	1.20	1.35	—0.15	11.11

TRAIN MILES.

Freight trains—revenue.....	11,919,675	11,719,366	200,309	1.71
Pass. trains—revenue.....	15,435,155	15,259,338	175,817	1.15
Mixed trains—revenue.....	1,523,654	1,432,242	91,412	6.38
Special trains—revenue.....	20,470	23,081	—2,611	11.31
Tl. tr. miles—loc'tives.....	28,898,954	28,434,027	464,927	1.64
Motor cars—revenue.....	777,050	626,980	150,070	23.94
Tl. tr. m. in rev. serv.....	29,676,004	29,061,007	614,997	2.12

LOCOMOTIVE MILES.

Freight—rev., light, help.....	13,509,215	13,252,088	257,127	1.94
Pass.—rev., light, help (b).....	16,550,102	16,158,511	391,591	2.42
Mixed—rev., light, help.....	1,562,085	1,469,841	92,244	6.28
Special—rev., light, help.....	29,715	30,969	—1,254	4.05
Total traffic miles.....	31,651,117	30,911,409	739,708	2.39
Switching	4,345,090	4,331,630	13,460	.31
Tl. miles in rev. serv. (b).....	35,996,207	35,243,039	753,168	2.14
Miles in non-rev. serv.—incl'd in "Trans. Ex.".....	550,168	537,665	12,503	2.33
Miles in other non-rev. service	1,087,071	1,228,945	—141,874	11.54
Total loco. miles ... (b).....	37,633,446	37,009,649	623,797	1.69

CAR MILES.

Freight cars, loaded—rev.....	326,323,963	329,078,939	—2,754,976	.84
Freight cars, empty—rev.....	107,563,567	110,125,338	—2,561,771	2.33
Caboose—revenue	11,914,754	11,768,231	146,523	1.25
Tl. fr't car and caboose—revenue	445,802,284	450,972,508	—5,170,224	1.15
Tl. fr't car and caboose—non-revenue	887,867	650,482	237,385	36.49
Tl. fr't car and caboose.....	446,690,151	451,622,990	—4,932,839	1.09
Passenger cars—revenue.....	108,199,773	103,683,015	4,516,758	4.36
Motor cars and trailers—revenue	1,080,998	954,330	126,668	13.27
Total pass. cars—rev. (c).....	109,280,771	104,637,345	4,643,426	4.44
Total pass. cars—non-rev.....	229,483	237,038	—7,555	3.19
Special cars—freight and caboose—revenue	293,589	315,406	—21,817	6.92
Special cars—pass.—rev.....	95,767	88,399	7,368	8.33
Total special cars.....	389,356	403,805	—14,449	3.58
Av. num. of cars in pass. trains	6.16	6.00	.16	2.67
Av. num. of loaded fr't cars in freight trains—East or North	21.61	25.29	—3.68	14.55
Av. num. of loaded fr't cars in freight trains—West or South	26.98	24.75	2.23	9.01
Av. num. of loaded fr't cars in freight trains.....	24.27	25.02	—0.75	3.00
Av. num. of loaded and empty fr't cars in fr't tr. (excl. caboose).....	32.28	33.40	—1.12	3.35
Ratio of loaded fr't car mileage to total fr't car mileage	75.21	74.93	.28	.37
Ratio of empty fr't car mileage to tl. fr't car mileage	24.79	25.07	—0.28	1.12

MISCELLANEOUS.

Av. cost of maint. of way and structures per mile of main tracks	\$1,237.87	\$1,431.18	—\$223.31	15.60
Av. cost of repairs and replacements per loco. per annum	3,723.57	3,712.32	11.25	.30
Av. cost of repairs and replacements per pass. train car per ann.....	973.90	1,045.78	—71.88	6.87
Av. cost of repairs and replacements per fr't train car per ann.....	92.02	107.95	—15.93	14.76
Trans. ex. per tl. tr. mile in rev. serv..... (a).....	83.42 cents	82.55 cents	.87 cents	1.06
Trans. ex. per loco. mile incl. in "Trans. Ex.".....	67.36 cents	66.79 cents	.57 cents	.85

(a) Based on "total train miles in revenue service." (b) Excluding miles run by motor cars. (c) Includes mileage of passenger-train cars in all trains. (d) Excludes non-revenue and caboose mileage.

UNION PACIFIC RAILROAD AND AUXILIARY COMPANIES.
NO. 8.—STOCKS OWNED OF OTHER COMPANIES, JUNE 30, 1912.

COMPANY.	TOTAL OUTSTANDING JUNE 30, 1912.	OWNED BY				+Increase. —Decrease. During Year.	Of the Total Owned there are	
		Union Pacific R. R. Co.	Oregon Short Line R. R. Co.	Oregon-Wash- ington R. R. & Nav. Co.	Total.		Pledged.	Unpledged.
Camas Prairie Railroad	\$20,000.00			\$10,000.00	\$10,000.00			\$10,000.00
Central Idaho Railroad	(a) 220,000.00		\$220,000.00		220,000.00			220,000.00
Green River Water Works	225,000.00	\$225,000.00			225,000.00			225,000.00
Kansas City Terminal Railway	1,000,000.00	100,000.00			100,000.00			100,000.00
Leavenworth & Topeka Railway	50,000.00	25,000.00			25,000.00			25,000.00
Leavenworth Depot & Railroad	150,000.00	50,000.00			50,000.00			50,000.00
McKeen Motor Car	1,000,000.00	550,000.00			550,000.00			550,000.00
Ogden Union Railway & Depot	300,000.00	150,000.00			150,000.00			150,000.00
Oregon & Washington Railroad	1,000,000.00		999,300.00		999,300.00			999,300.00
Pacific Fruit Express	(b) 10,800,000.00	5,400,000.00			5,400,000.00			5,400,000.00
Rattlesnake Creek Water Co.	78,300.00	78,300.00			78,300.00			78,300.00
Riverside Homestead	100,000.00	100,000.00			100,000.00			100,000.00
St. Joseph & Grand Island Railway.								
Common Stock	4,600,000.00	4,076,400.00			4,076,400.00	+ \$120,000.00		4,076,400.00
First Preferred Stock	5,500,000.00	2,544,640.00			2,544,640.00	+ 115,300.00		2,544,640.00
Second Preferred Stock	3,500,000.00	2,876,350.00			2,876,350.00	+ 157,250.00		2,876,350.00
Salt Lake & Idaho Railroad	(a) 160,000.00		160,000.00		160,000.00			160,000.00
San Francisco & Portland Steamship.	500,000.00			500,000.00	500,000.00			500,000.00
San Pedro, Los Angeles & Salt Lake R. R.								
Capital Stock	25,000,000.00		12,500,000.00		12,500,000.00			12,500,000.00
Short Line Land & Improvement	100,000.00		50,000.00		50,000.00			50,000.00
Topeka Iron	110,000.00	55,000.00			55,000.00			55,000.00
Union Depot & Railway (Denver)	400,000.00	240,000.00			240,000.00			240,000.00
Union Land	10,000.00	10,000.00			10,000.00			10,000.00
Union Pacific Coal	5,000,000.00	5,000,000.00			5,000,000.00			5,000,000.00
Union Pacific Equipment Association	100,000.00	100,000.00			100,000.00			100,000.00
Union Pacific Land	100,000.00	100,000.00			100,000.00		\$99,400.00	600.00
Union Pacific Water	500.00	500.00			500.00			500.00
Utah Light & Railway.								
Common Stock	1,942,550.00		1,853,600.00		1,853,600.00	+ 1,250.00		1,853,600.00
Preferred Stock	3,863,175.00		3,842,875.00		3,842,875.00			3,842,875.00
Yakima Valley Transportation	500,000.00		499,700.00		499,700.00			499,700.00
Total		\$21,681,190.00	\$20,125,475.00	\$510,000.00	\$42,316,665.00	+ \$393,800.00	\$99,400.00	\$42,217,265.00

(a) 10 per cent. paid. (b) \$5,400,000 owned by Southern Pacific Company.

NO. 9.—INVESTMENT STOCKS OWNED, JUNE 30, 1912.

COMPANY.	TOTAL OUTSTANDING JUNE 30, 1912.	OWNED BY				+Increase. —Decrease. During Year.	Of the Total Owned there are	
		Union Pacific R. R. Co.	Oregon Short Line R. R. Co.	Total.			Pledged.	Unpledged.
Baltimore & Ohio Railroad.								
Common Stock	\$151,590,092.26		\$32,334,200.00	\$32,334,200.00			\$10,255,400.00	\$22,078,800.00
Preferred Stock	58,873,974.71		7,206,400.00	7,206,400.00			7,206,400.00	
Chicago & Alton Railroad.								
Preferred Stock	19,544,000.00	10,343,100.00		10,343,100.00				10,343,100.00
Chicago & Northwestern Railway.								
Common Stock	130,117,213.82		4,018,700.00	4,018,700.00				4,018,700.00
Chicago, Milwaukee & St. Paul Railway.								
Preferred Stock	116,274,900.00		1,845,000.00	1,845,000.00				1,845,000.00
Illinois Central Railroad.								
Capital Stock	109,296,000.00	22,500,000.00		22,500,000.00				22,500,000.00
New York Central & Hudson River R. R.								
Capital Stock	222,729,300.00		17,857,100.00	17,857,100.00			8,000,000.00	9,857,100.00
Northern Securities.								
Stubs					—\$724,900.00			
Railroad Securities.								
Common Stock	3,486,420.00	3,484,420.00		3,484,420.00				3,484,420.00
Preferred Stock	1,936,900.00	1,936,900.00		1,936,900.00	+ 500.00			1,936,900.00
Southern Pacific.								
Common Stock	272,672,405.64		126,650,000.00	126,650,000.00			108,000,000.00	18,650,000.00
Total		\$38,264,420.00	\$189,911,400.00	\$228,175,820.00	—\$724,400.00		\$133,461,800.00	\$94,714,020.00

NO. 10.—BONDS OWNED OF OTHER COMPANIES, JUNE 30, 1912.

COMPANY.	TOTAL OUTSTANDING JUNE 30, 1912.	OWNED BY				+Increase. —Decrease. During Year.	Of the Total Owned there are	
		Union Pacific R. R. Co.	Oregon Short Line R. R. Co.	Oregon-Wash- ington R. R. & Nav. Co.	Total.		Pledged.	Unpledged.
Atchison Union Depot & Railroad—	cond Mort-							
gage 5%		\$3,500			\$3,500	—	\$1,000	\$3,500
Cheyenne County, Colorado—Refund	ing 5%	26,200			26,200			26,200
Chicago, Milwaukee & St. Paul R.	Convertible							
4½%			\$276,700		276,700	+	276,700	276,700
Green River Water Works—First M	ortgage 6%	\$194,000			194,000			194,000
Leavenworth & Topeka Ry.—First M	ortgage 4%	250,000			250,000			250,000
Leavenworth Depot and R. R.—First	mortgage 5%	150,000			150,000			150,000
Northern Pacific Terminal—First M	ortgage 6%	3,335,000			3,335,000			3,335,000
Ogden Union Ry. & Depot—First M	ortgage 5%	326,000			326,000			326,000
Payette Valley Railroad—First Mort	gage 5%	44,000			44,000			44,000
Payette Valley Extension R. R.—Firs	t mortgage 5%	140,000			140,000			140,000
Rattlesnake Creek Water—First Mo	rtgage 6%	146,000			146,000			146,000
San Pedro, Los Angeles & Salt Lak	e R. R.—First							
Mortgage 4%		55,155,000	27,577,000		82,732,000	+	3,160,000	\$24,271,000
Sharon Springs Township—Railroad	id 5%	15,000			15,000			15,000
South Pacific Coast Railway—First M	ortgage 4%	5,500,000	270,000		5,770,000	+	270,000	270,000
Southern Pacific.								
4% Twenty-Year Convertible		81,151,000	927,000		82,078,000			82,078,000
4½% Twenty-Year Gold		227,000	66,000		293,000			293,000
Utah Light & Power—Consolidated M	ortgage 4%	1,115,000	2,000		1,117,000			1,117,000
Utah Light & Railway.								
Consolidated Mortgage 5%		1,485,000	993,000		2,478,000			2,478,000
Collateral Trust 6%		100,000	5,000		105,000			105,000
Union Pacific Coal—First Mortgage 5%	(a) 5,000,000	3,354,000			3,354,000			3,354,000
Union Pacific Land—First Mortgage 4%	5,196,840	5,196,840			5,196,840	—	185,000	5,196,840
Total		\$9,613,540	\$30,030,700	\$155,000	\$39,799,240	+ \$3,515,700	\$29,467,840	\$10,331,400
Southern Pacific.								
4% (C. P. Stock Collateral)	34,218,500	5,449,000			5,449,000	+	5,449,000	5,449,000
San Francisco Terminal First Mortgage 4%	24,990,000	6,000,000			6,000,000	+	6,000,000	6,000,000
Southern Pacific Railroad—First Refunding M	ortgage 4%	137,320,000	14,568,000		151,888,000	+	14,568,000	14,568,000
Total		\$35,630,540	\$30,030,700	\$155,000	\$65,816,240	+ \$29,532,700	\$29,467,840	\$36,348,400

(a) \$1,646,000 held by Union Pacific Coal Co. sinking fund.

[illegible]